ENGINEERING NEWS-RECORD

Pipeline joints: 100 man-hours each p. 35

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WROUGHT IRON PUTS A STOP TO CORROSION ON THE NEW JERSEY TURNPIKE

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Howard, Needles, Tammen and Bergendorff, N.Y., are General Consultants for the entire Turnpike Authority.

Our booklet, *Wrought Iron for Highway Construction*, defines the reasons for this material's unique ability to resist corrosion, and describes a variety of highway services where wrought iron has served and saved. Write for your copy.

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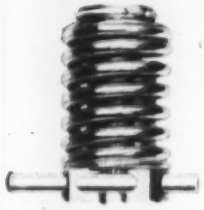
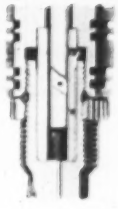
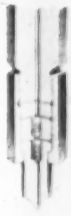


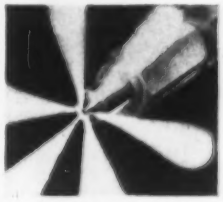
Injector drive is direct from the overhead camshaft by means of a rocker arm. Precision rack and pinion actuated by hydraulic servo type governor controls the amount of fuel to be injected.



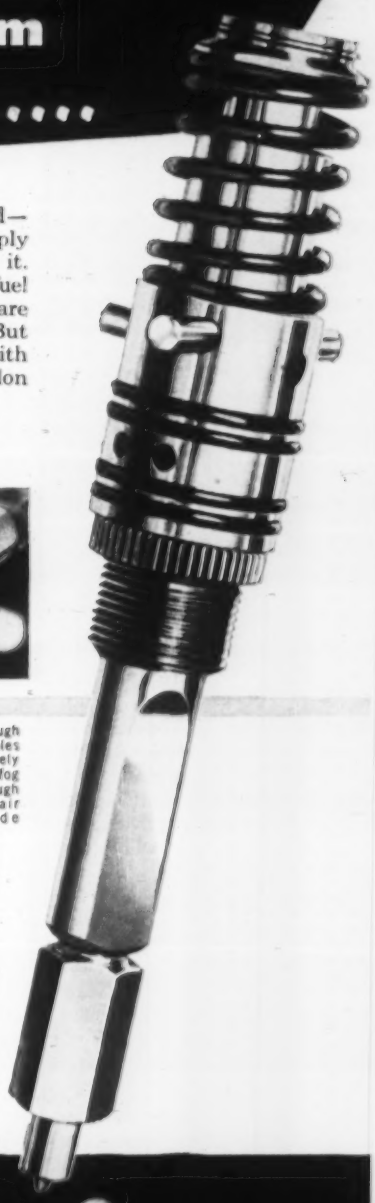
Fuel enters the injector at approximately 20 psi. travels through an annular passage into the injector cylinder. No priming —no bleeding.



On the plunger's downstroke, the intake port is closed and the fuel forced out the nozzle through **dual** flat seat check valves — **double** protection.



Solid fuel forced through six properly sized holes in the nozzle is completely atomized as a fine fog and distributed through the incandescent air charge to provide thorough combustion.



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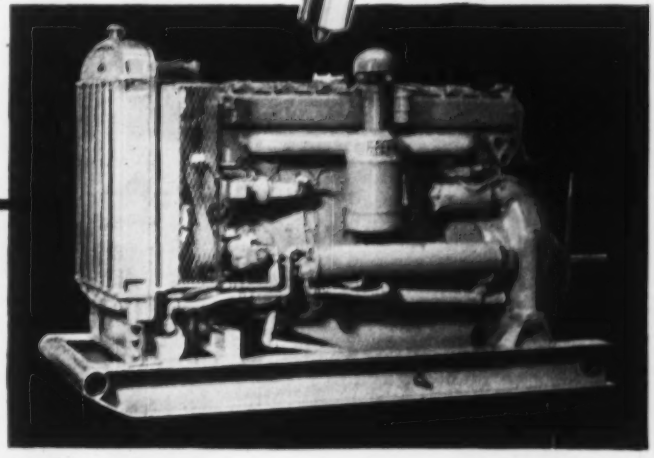

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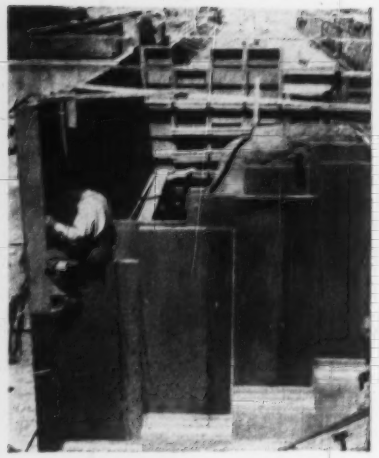

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Robert F. Boger
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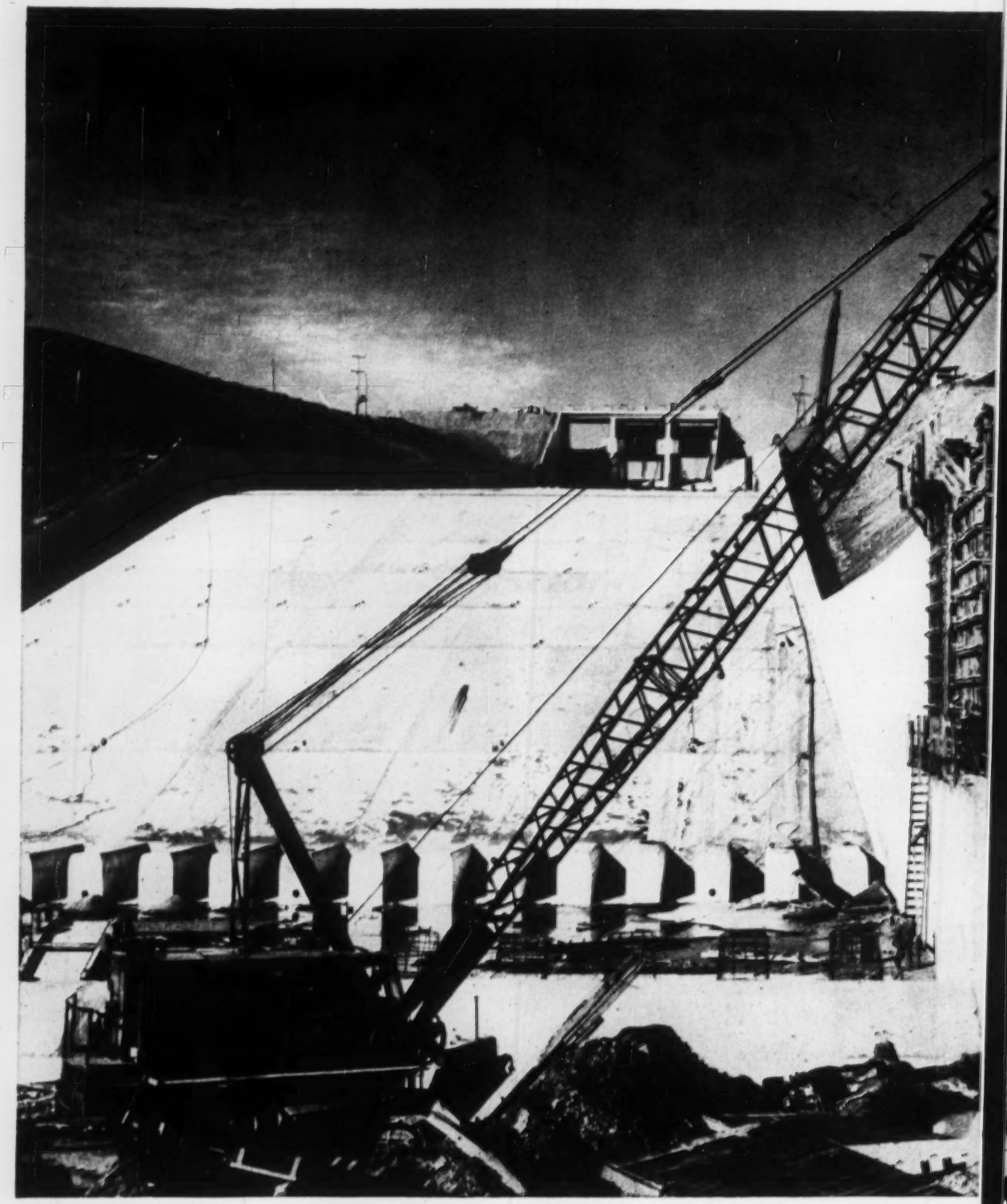

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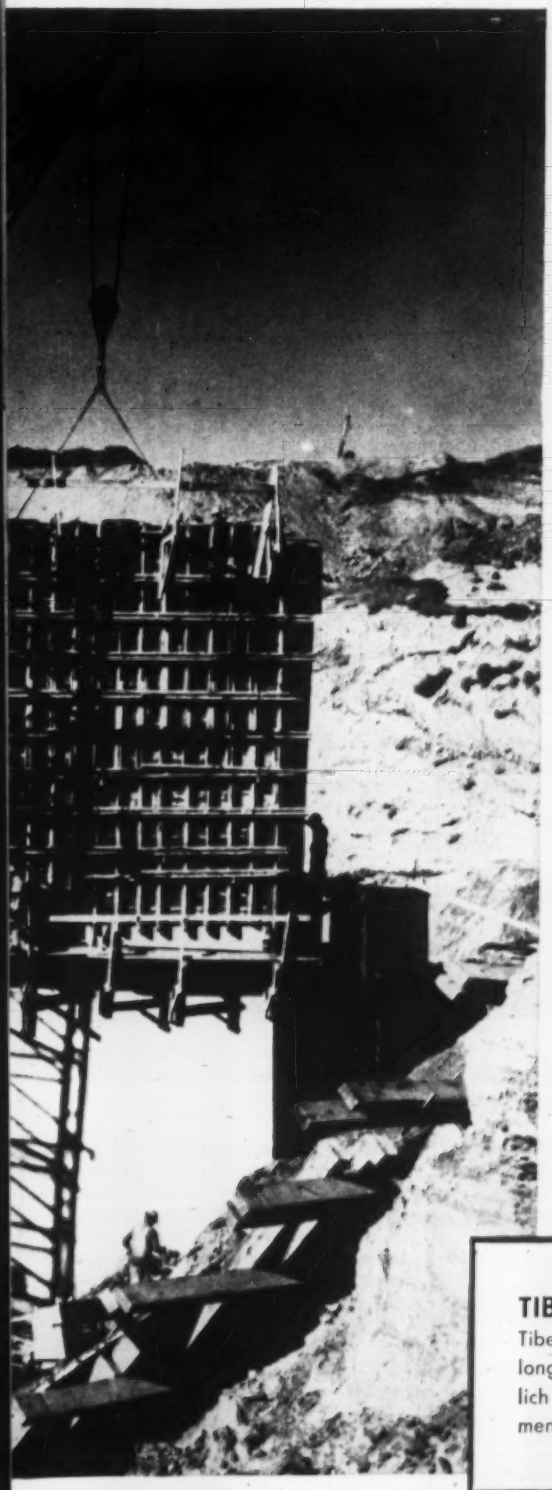

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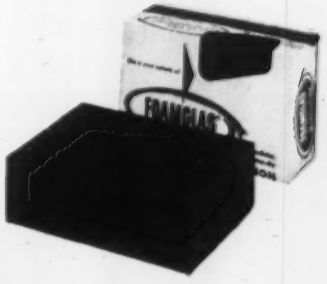

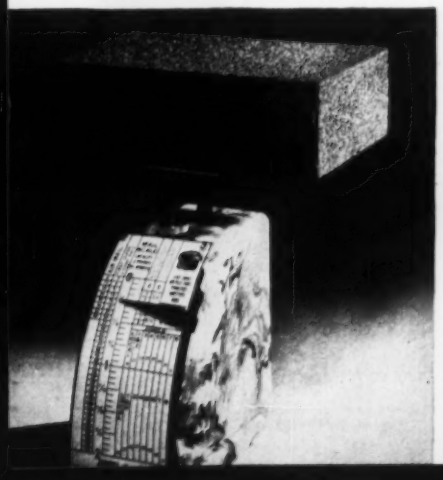

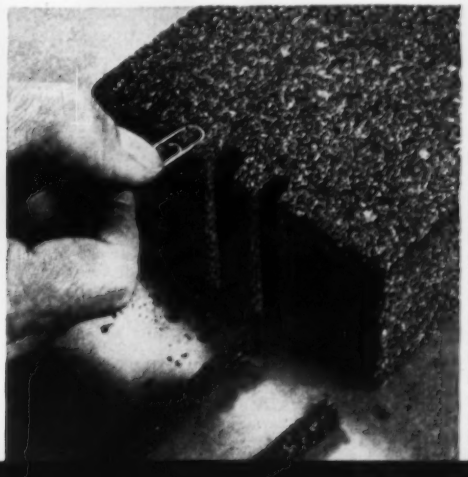

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Reader Comment

Ohio Turnpike Standards

SIR—In your editorial "No Compromise in Standards" (ENR Jan. 5, 1956, p.118) it is stated that "the Ohio Turnpike Commission is considering reducing standards originally set for the second Ohio turnpike." It is the Commission's firm intention that any changes made in the design of this prospective north-south turnpike will be accomplished without any lowering of its standards of service and safety. These design changes are only being considered for sections of prospective light traffic density.

The editorial mentions a number of prospective changes, and I would like to comment on each of them as follows:

"Interchanges are to be eliminated"—Where prospective traffic could not justify the cost of constructing and operating an interchange, it might be eliminated, or two such interchanges might be combined at a third location.

". . . minor intersections at grade will be permitted"—Where adopted, this change would apply only to the area of entrance to or exist from an interchange at the intersecting state highway. No crossing at grade of any description is contemplated on the turnpike proper.

". . . grades steepened somewhat"—At the meeting of the Commission on December 22 the Director of Highways told the Commission that the climbing grades in those areas where traffic would be least dense and where presumably there would be the least amount of truck traffic could be increased from a two-percent grade to a three-percent grade.

". . . pavement thinned where traffic is light"—At the meeting of December 22 the Director of Highways told the commission that the proposed changes in design had included in the lighter traffic areas a pavement designed for a lighter frequency of heavy loads.

". . . shoulder width reduced"—At the meeting of December 22 the Director of Highways told the Commission that the proposed reduction of the shoulder on the inside lane by the median could be done without any sacrifice of safety and with the provision of ample safe-passing room in the areas where traffic would be least dense.

JAMES D. HARTSHORNE,
Director of Information and Research,
Ohio Turnpike Commission,
Columbus, Ohio.

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Hose Sewage Into Ocean

SIR: Good results with sewage treatment lagoons (oxidation ponds) designed by us throughout the Northwest indicate that there is nothing wrong with depending on natural processes to purify sewage (ENR April 1, 1954, p. 4).

Los Angeles is fortunate in having such a pond of unlimited size benevolently provided by nature. All that is necessary for good results is to discharge sewage far enough out from shore so that oxidation will be complete before any particles can reach the shore—if Los Angeles sewage were discharged at a point half way to the Hawaiian Islands, not even the most persnickity health official could object.

My suggestion to Richard R. Kennedy regarding his article in ENR Nov. 24, 1955 is to provide an ocean outfall sewer longer, deeper, and less expensive than presently contemplated. To make this practical, a new concept of design is needed. There is no need for a massive pipe of steel or concrete; a canvas hose would meet the requirements, held open by a small excess head in the discharging sewage.

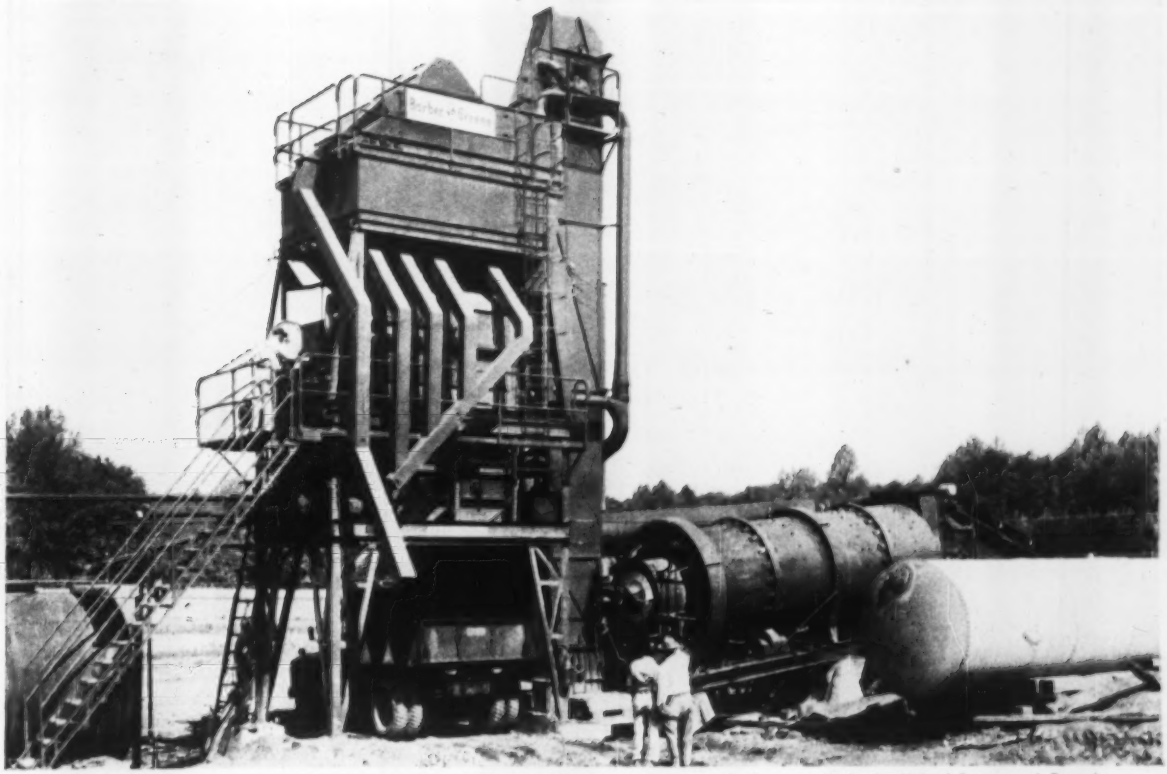
That is my proposal—a flexible tube, perhaps of nylon and neoprene, containing enough anchor weights to hold it in place, unreeled onto the ocean bottom off a ship, in the same manner as laying a submarine telephone cable, discharging as far offshore as required for good sanitation.

WILLIAM J. WENZEL
Wenzel & Miller—Engineers
Great Falls, Montana

Easy Way to Avoid Failures

SIR—May I inquire as to what research supports your editorial placing the blame on the use of solid lines for reinforcing-bar designation for some concrete structures that have fared badly (ENR Dec. 1, p. 96).

Solid lines have been preferred by



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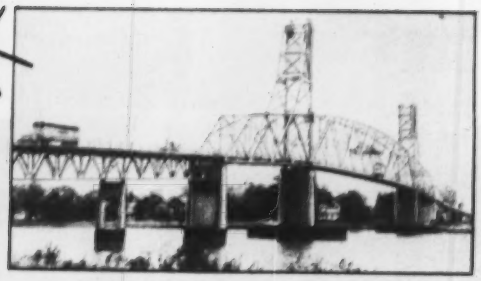

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. . . Reader Comment

many good engineers for bar designation since the early use of reinforcing bars and not just since the publication of the American Concrete Institute Manual.

Non-professional detailing is the actual weak link. Designers can avoid dangerous conditions slipping through undetected and get added protection if they would specify professional detailing. You cannot detail by rote, any more than you can design by rote. Proper interpretation and a thorough knowledge of concrete design provides good detailing.

Professional designing not only requires professional detailing but also professional inspection. With this combination you could close up your failure reporting department.

WILLIAM FLESHER
Engineer
Philadelphia, Pa.

[EDITOR'S NOTE—During our field inspections and in the course of preparing stories about the many structures published in ENR, we examine a wide variety of working drawings, including those for "some concrete structures that have fared badly." It is this experience, which prompted our statement that representing reinforcing bars and the outline of concrete by the same symbol is a questionable practice.]

Contract Delay Penalties

SIR—I cannot refrain from comment on your news item (ENR Dec. 22, 1955 p16) which describes California's policies in penalizing contractors for their failure to complete work on time. When the penalty includes an item for the additional cost to the highway user, one wonders why the State rather than the user should be entitled to the penalty monies. Granted that the State represents the users collectively, the injured individual is not compensated by this policy. Furthermore, this policy seems to imply that the State is blameless in wasting the highway users' time and money; for example, why should a contractor be penalized for a few days delay in completing a grade separation while the State has tolerated the grade crossing, which the separation structure replaces, for many years, thus wasting untold valuable waiting time and possibly causing serious accidents.

Regardless of the practicalities of spurring on the completion of work and of raising monies for the public till, unless the state be "Simon pure" I fail to see any logic and justice in

(*Continued on page 14*)

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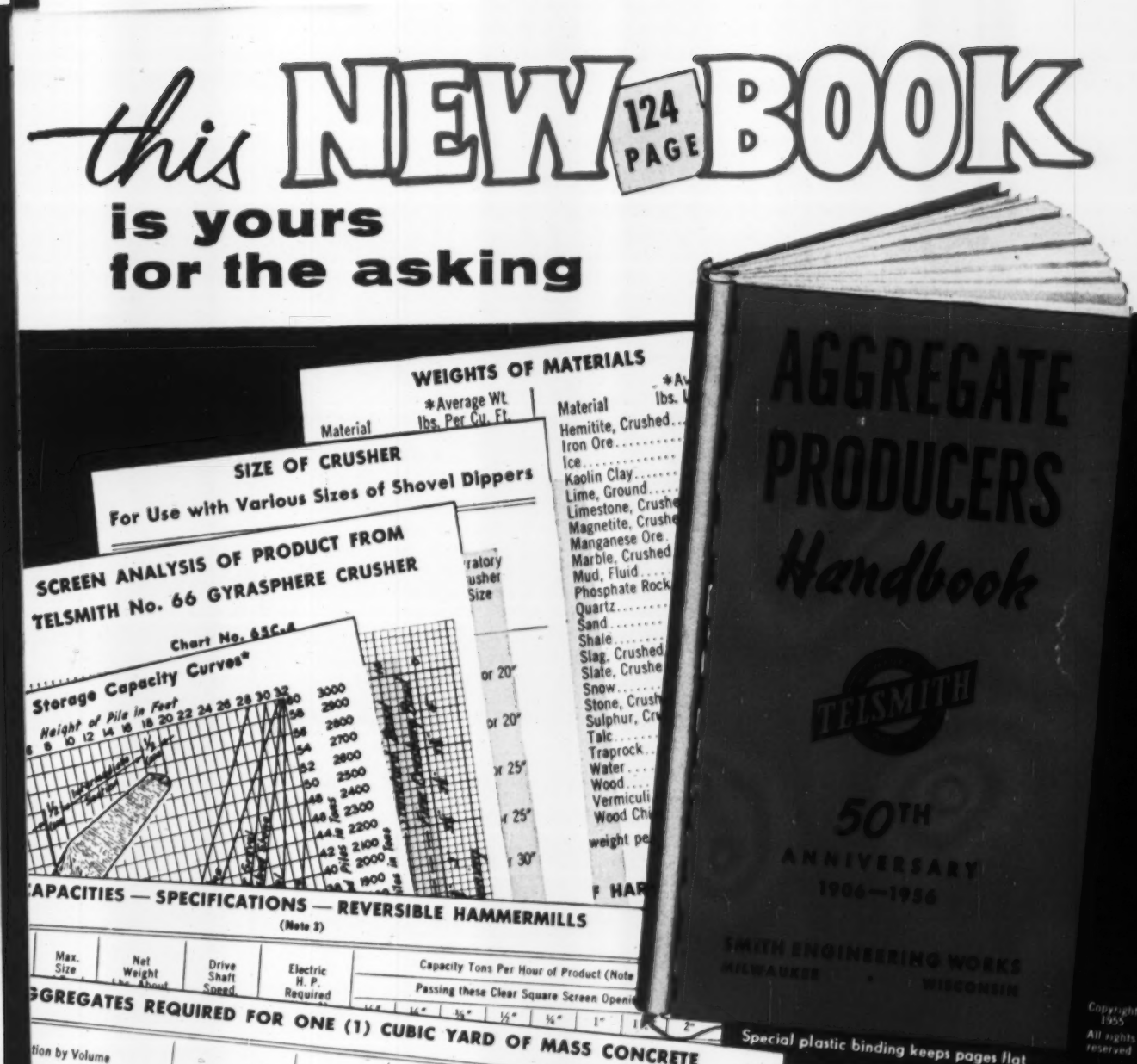

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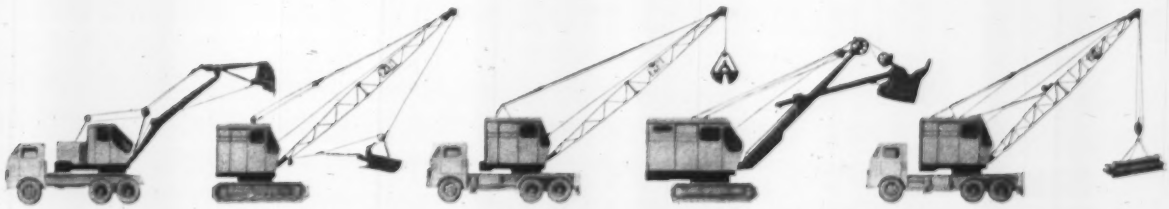

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. . . Reader Comment

basing delay penalties upon "additional costs to the motor vehicle user." In private enterprise, penalties or bonuses can be made commensurate with anticipated profits. In public works, penalties may be based arbitrarily on a percentage of the contract price, but to seek to place them on a rational basis involving "cost to user" would seem to put the State in the position of assessing others for the same fault of which it is, itself, not blameless.

I do not mean to suggest that California is not guiltless of delay in providing highway facilities which save the users money and time, but I am quite sure that the practices of many states are not above reproach hence, that if these policies were adopted elsewhere there would be inequities involved. I feel that the contractors have valid logic as well as economic basis for their stand in this particular matter.

There is greatly needed a comprehensive evaluation of the cost to the public of delays associated with the failure of the government to provide at the proper time facilities to speed the movement of traffic.

HAMILTON GRAY
Chairman, Department of Civil Engineering
The Ohio State University
Columbus, Ohio

CALENDAR

Associated Equipment Distributors, annual meeting, Conrad Hilton Hotel, Chicago, Ill., Jan. 29-Feb. 2.

Mason Contractors Association of America, annual convention, Hotel Kentucky, Louisville, Ky., Feb. 5-8.

Architectural Division, Porcelain Enamel Institute, winter conference, Sheraton Hotel, Chicago, Ill., Feb. 8-9.

Society of American Military Engineers, annual technical meeting, Palmer House, Chicago, Ill., Feb. 9-10.

Association of Asphalt Paving Technologists, annual meeting, Hotel Cleveland, Cleveland, O., Feb. 13-15.

Associated General Contractors of America, national convention, Waldorf-Astoria Hotel, New York, N. Y., Feb. 13-16.

American Society of Civil Engineers, National winter convention, Baker Hotel, Dallas, Texas, Feb. 13-17.

American Concrete Institute, annual convention, Bellevue-Stratford Hotel, Philadelphia, Pa., Feb. 20-23.

American Concrete Pipe Association, annual convention, Broadmoor Hotel, Colorado Springs, Colo., March 6-10.

Fifth Inter-American Sanitary Engineering Congress, Lima, Peru, March 19-25.

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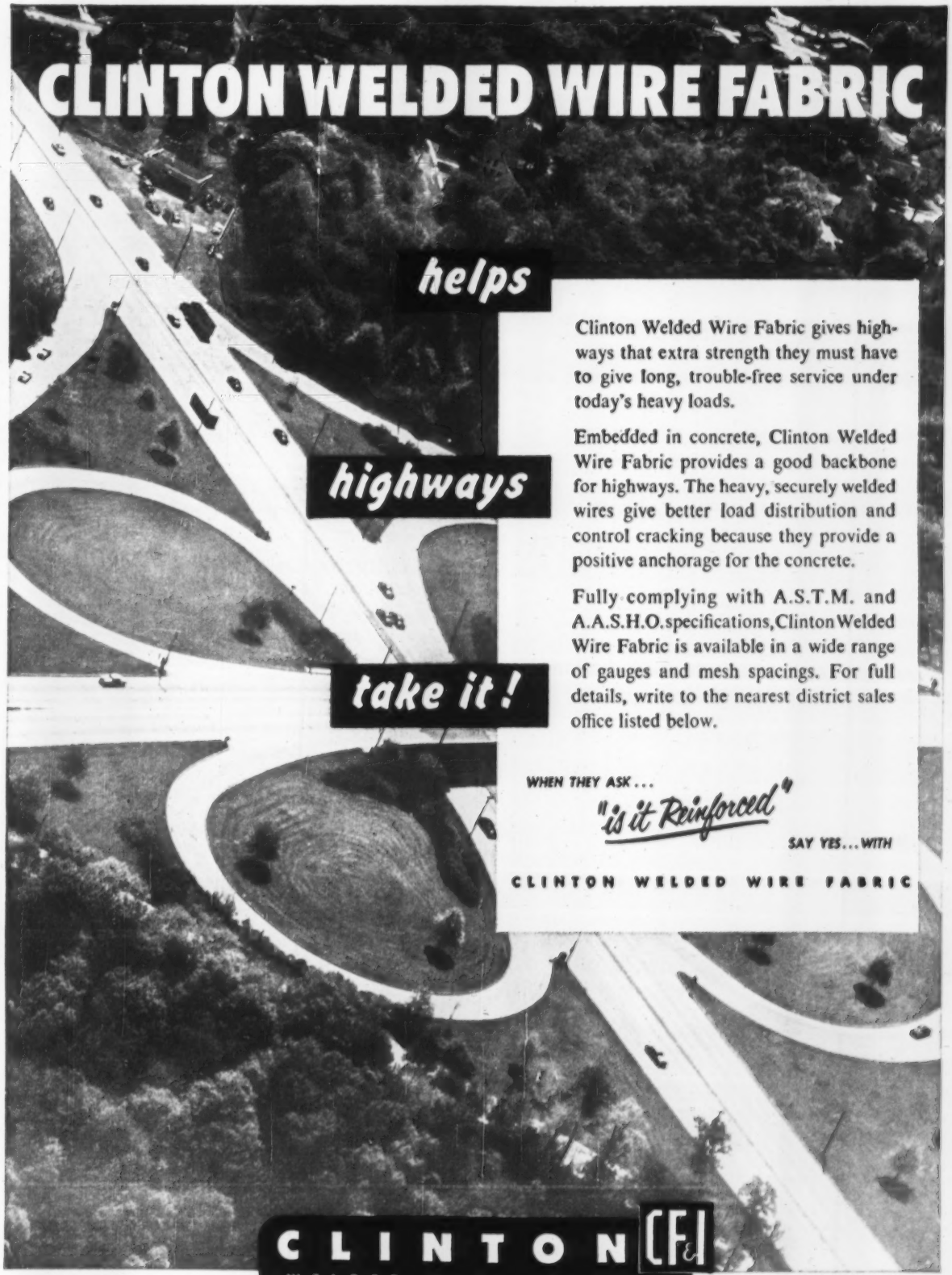

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

DOWNTURN FOR HOUSING—Representative builders from 35 areas met last week in Washington for a two-day session on the housing market and some of its problems. Their somewhat pessimistic conclusion: Starts in many areas may be down as much as 15% this year from the record-breaking '55 level. Tight money and rising land costs are making homebuilding operations more competitive than at any time since World War II, the builders agreed. Homebuilders also are facing some comparatively new problems such as a new trend of assessing builders a fixed sum ($100 to $500 per house) to pay for such community facilities as schools, sewers and parks (page 99).

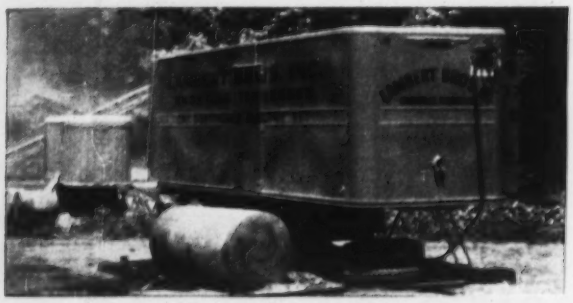
FEDERAL INCENTIVES—Two new concepts of federal aid approved by the last session of Congress—loans for advance planning of local public works and urban renewal—are shaping up as popular incentive systems for local governments. At a National Conference on Public Works, sponsored by ASCE and AIA, in Washington last week, these points were outstanding.

Loan applications to defray the cost of preliminary planning of local public works in the past year have amounted to $2,216,000, which at the normal 1% of project cost represent about $200 million in potential construction. John C. Hazeltine, Commissioner of HHFA's Community Facilities Administration, outlining the government's new advance planning aid program (a revolving fund into which $48 million is being put in three years), emphasized that his agency is not particularly interested in "shelf" of long-range plans but rather in a three to five-year turnover of active projects.

About 100 urban renewal projects are now under loan and grant contracts. Commissioner James W. Follin of HHFA's Urban Renewal Administration called attention to the incentive for municipalities to channel some of their regular public works funds into the public works improvements required by these projects in order to realize assistance from federal matching funds.

LABOR PEACE PLAN—Another step toward labor peace has been taken—this time in Texas. After many months of negotiations, the Houston Chapter of the AGC and the Houston Building and Construction Trades Council have achieved an established pattern of three-year labor contracts and have adopted a plan designed to eliminate work stoppages stemming from jurisdictional disputes (page 104). In the two-fold program of stabilization, its sponsors see "a new era of construction progress and peace."

HOW MOBILE CAT* POWER PAYS OFF FOR LAMBERT BROS., INC.



A D397 Mobile Electric Set provides crusher power on a job for Lambert Bros., Inc., near Greenback, Tennessee. The 315 KW D397, Caterpillar's biggest trailer-mounted electric set, is well within highway weight and size restrictions.

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MODERN, HEAVY-DUTY PORTABLE ELECTRIC POWER

WASHINGTON OBSERVER

Democrats are going to have a one-bill highway program. The change in strategy was announced this week by Speaker Sam Rayburn who took the lead in pushing highway legislation last year.

Up to now, the idea has been to have Ways and Means write the taxes. Then they would be attached to the highway building bill as an amendment.

Now, Public Works Committee will handle both program and taxes. This is the way the House Democrats worked it last year—when the bill was beaten on the floor. Ways and Means members actually will have the most to say about the revenue-raising side of the single bill that goes to the House floor.

The theory is that this makes a highway program more likely, by not giving members a chance to vote for the spending, but against the taxes.

•

A new list of military projects to be authorized by Congress was submitted last week. It calls for $2 billion of construction, some of it to be built over a period of years. It also contains many projects that will be started next fiscal year—which will contribute to the $1.9 billion of construction spending by Army, Navy, and Air Force.

Almost 300 projects are called for in 47 states amounting to about $1 billion. The balance is about $500 million for overseas; and another $400 million designated as "classified."

•

Air Force officials are trying to get more money for base construction. The budget just sent to Congress gives them $1.1 billion for the year beginning next July 1—down $200 million from the estimated $1.3 million for the current year.

Air Force brass hopes to feed ammunition to the Democrats who control Congress. They talk about $500 million more.

Their story is this: We have to be ready for 137 wings by July 1957—and this deadline can't be met with current construction schedules. They're not after more bases—they just want to complete faster those construction projects already in the works. This would mean adding as much as $500 million more for construction to next year's spending.

Chances of final approval of any big build-up seem slim—short of another war scare or a sharp slide in business. Eisenhower will stand by his budget just sent to Congress and Congress isn't apt to override Eisenhower to this extent.

•

Eisenhower wants VA-loan guarantees to end—but Congress may rebel. In his Budget Message, the President said veterans no longer need a housing guarantee program of their own and he would let VA's housing loan guarantee authority—which is similar to that of FHA—expire July 25, 1957.

But VA's authority has been more liberal than FHA and the veterans organizations will put on the pressure. Hence, it's a good bet—in view of the politics and the fear of a housing decline this year—Congress would go for an extension. If Congress approves, it's a good guess, too, that Eisenhower would not veto.

•

Civil and sanitary engineers rate special preference in the new listings of jobs and skills that get a break in the military's reserve program.

Engineers on defense projects or water and sewerage systems can now get their military duty out of the way by enlisting for only six months service. Ordinarily, they'd be subject to at least two years service.

Those engineers considered in excess of military needs will be screened out of the ready reserve into the standby reserve. This means they do not have to take part in compulsory reserve training drills and will be less liable to recall in case of a new national emergency.

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President's Water Policy Committee Recommendations . . .

would . . .

- Create a "water czar" of sorts
- Set up a board of project review
- Leave final project authorization with Congress
- Double federal efforts at collecting hydrologic data

would not . . .

- Strengthen the Water Pollution Control Act
- Impose a uniform water priority system over the nation
- Affect local water laws, except to urge groundwater control

Eisenhower Unveils Water Policy

President Eisenhower last week sent to Congress his long-awaited proposals for modernizing and coordinating federal water resources policies. He asked Congress to "give prompt attention" to major recommendations contained in a 35-page report of his Cabinet Committee on Water Resources Policy.

These recommendations form the backbone of the "comprehensive legislative program for water conservation" that the President promised in his State of the Union Message.

They would centralize control over federal water projects in the White House, encourage the partnership concept to assure local participation in all phases of new developments from advance planning to final payment, and speed up the gathering and interpretation of basic data to permit best use of available water resources.

In many respects, however, the report takes things as they are and recommends little change. The committee would not consolidate all federal water programs in a single agency, nor would it completely shut off the half-dozen agencies now handling these programs from direct access to Congress.

But a pair of new White House entities would limit the present freedom of the agencies in proposing projects. Top official in the new hierarchy would be a coordinator of water resources, functioning possibly as a part of the office of Gen. John S. Bragdon, the President's special assistant for public works planning. Under him, the plan calls for an appointed three-man board of review to evaluate all proposed programs and projects for water resources development.

A proposal should not go to Congress, the policy committee says, until the water resources coordinator has cleared it. However, when the coordinator turns down a proposal, he should either let the agency send it to Congress with his comments or give the agency a chance to revise and resubmit its report to him.

On White House coordination and the suggested board of review, the policy committee follows pretty closely the parallel recommendations of the two Hoover Commissions and the Kestnbaum Commission on Intergovernmental Relations.

Besides more White House control, the committee has two other major recommendations:

• A sharp increase in funds to determine the quantity and quality of the water supply now available in all regions of the country, and other data needed for sharpening our knowledge of the problem.

• More sharing of the cost of water development by those who benefit from water programs.

This recommendation—that users of water be required to pay the full cost of benefits that can be identified as accruing to them—is part of the President's "partnership" approach to public works, and has already been tried in Congress.

In some cases—as in partnership with public utilities in developing power at multi-purpose dams—partnership is making some headway. But the Administration has met resistance on other aspects such as charging users of waterways fees to pay for maintenance and operation of the navigable waters—or making U. S. Steel pay for part of the cost of additional deepening of the Delaware River between Philadelphia and the new U. S. Steel plant.

Here's the committee's estimates on water use in 1959 and estimated use in 1975 (in billions of gallons per day):

	1950	1975
Municipal and rural	17	25
Direct industrial	80	215
Irrigation	88	110

(Continued on page 22)

. . . Eisenhower unveils water policy

These figures indicate a 90% increase in water use over the 25-year period. But by far the largest increase is predicted for industrial usage—up from 43% of the total in 1950 to 62% of the total in 1975. This represents an increase of 170% in industrial use over the 25-year period.

On data collection the report recommends increase in: additional precipitation measuring stations, streamflow measuring points, daily chemical analysis locations, sampling of sediment flow, soil classification and mapping, topographical mapping, and the like. All told this would call for an increase in federal appropriations for these activities from the present $40 million to $80 million per year, but the President didn't include the requests in his fiscal 1957 budget.

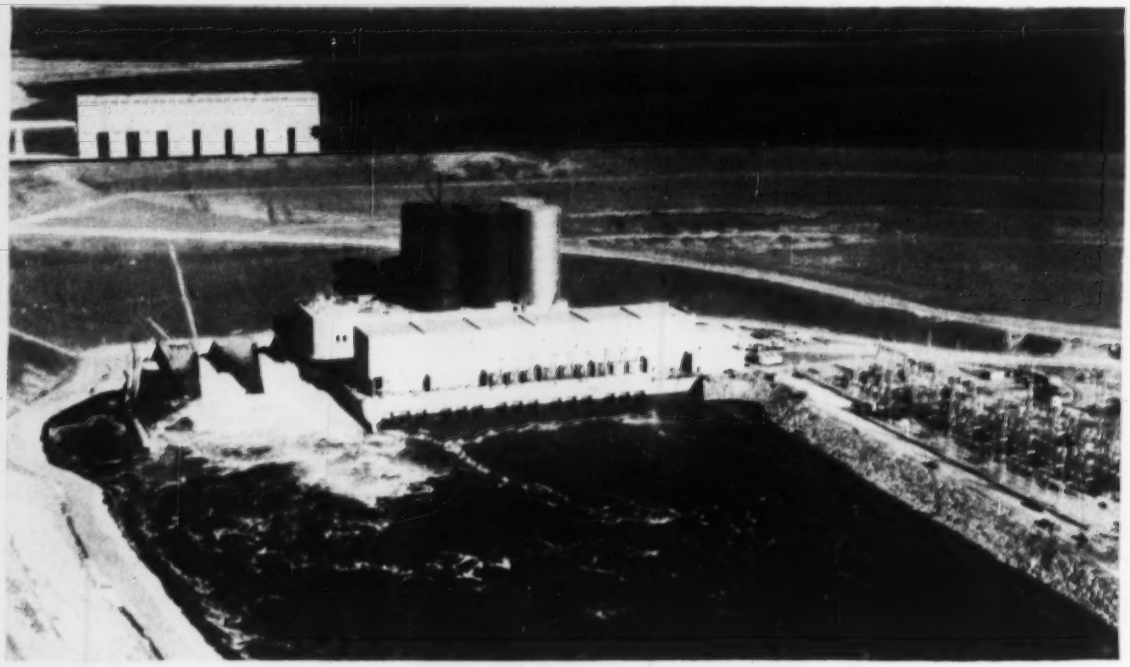
Some of the recommendations could be put into effect without the approval of Congress. But the President at his news conference last week indicated that he thought he would want to have Congressional approval before he carried out any of the major changes recommended.

On one aspect of water policy—stream pollution—the committee carefully walked a line that indicated no change in existing law. There has been a push from some agency officials to beef up the present stream pollution law to give more power to the federal government to stop a polluter. As thing stand now, states have what amounts to a veto power over any prosecution.

McKay, Wilson, and Benson spelled out what they consider the basic elements of a sound water policy:

It must provide an adequate supply for the future, prevent waste, provide greater re-use, reduce pollution "to the lowest practicable level," provide for distribution of available supply, and work to check destruction "the destructive forces of water."

The committee figures daily consumption of water now averages 200,000 million gallons per day—or about 1,200 gallons per day per capita.



Transformer's Bugs Add Drama at Garrison Dam

The No. 1 generator was ceremoniously turned on Jan. 21 at the Army Engineers' Garrison Dam, Riverdale, N. D. But the drama of the formal ceremony was eclipsed by the events that led up to it.

Getting Garrison's 80,000-kw generator ready in time for the ceremony was a race. With the ceremony date a gun pointed at their heads, workmen ticked off the many individual tests. The plant came through each until only the final test remained.

The generator was set to spinning and its full output was sent through the line. A workman standing near a transformer heard a soft "pop." Dials on the control panel wildly set off urgent signals. The plant was shut down.

This was midnight of the day before the ceremony. Tracing down the trouble step-by-step, by deduction and testing—the normal routine—would take days. With the ceremony only hours away, Army Engineers sought to pinpoint the trouble quickly. Calls went out to experts throughout the nation. They confirmed suspicions that the trouble was in the transformer. Since the transformer was built in England, transatlantic phone calls had to be made, which because of the time differential, got officials out of bed. The calls confirmed suspicions.

The trouble was in the taps of the voltage regulator. These are arms that move automatically over a series of taps to hold voltage constant. Apparently the arm had stopped midway between the taps, causing a short circuit. The manufacturing firm cut off all hopes for repairs in time for the ceremony. The best procedure, they counseled, would be to substitute the transformer on hand for No. 3 generator for the No. 1.

This meant that the generator could be set to spinning at the ceremony but no power would go out. This circumstance took no bloom off the occasion for North Dakotans. More than 600 strong, they braved −20 degree weather to be on hand. They heard Edward A. Bacon, Deputy Assistant Secretary of the Army, make a plea for support of the Administration's new water resource policy (above). They watched North Dakota Gov. Norman Brunsdale push the button that set the 700-ton unit to spinning. Then they listened to the muscular roar of the first hydroelectric generator ever set to turning in North Dakota.

Ohio River Work

$78 million in contracts for sewage system

The Ohio River clean-up campaign took a giant step as contracts were awarded on a $78-million sewerage system for Pittsburgh and Allegheny County. The contracts let by the Allegheny County Sanitary Authority totaled approximately $61.5 million for interceptor sewers and $16.7 million for a 150 mgd treatment plant (see Construction Reports—second section). Work on the system is scheduled to begin shortly after Feb. 15.

When completed in 1958—June of that year is the deadline set by the Pennsylvania Sanitary Water Board—, the system will link Pittsburgh and 66 other Allegheny County communities and will serve an estimated 75% of the county's 1,500,000 population. The project has been in the planning and designing stage since 1946.

The Dravo Corp. and two combines received $50.7 million of the total contracts awarded.

Dravo submitted a low bid of $8,172,500 on a contract for part of the Ohio River interceptor, about 3½ mi of sewer in tunnel varying from 54 to 126 in. id and includes two river crossings.

Its other contract, for $10,565,500 is for a portion of the Allegheny River interceptor, approximately 6 mi of sewer in tunnel, from 48 to 72 in. id.

A combine headed by B. Perini & Sons, Framingham, Mass., submitted low bid of $12,249,001 for a portion of the Monongahela River interceptor, approximately 6 mi of sewer in tunnel varying from 18 to 90 in. id. Regarded as one of the more difficult jobs, this contract calls for boring of a tunnel 520 ft below Pittsburgh's Squirrel Hill section. It will be in the same area as the Squirrel Hill Tunnel of the new Penn-Lincoln Parkway, but 350 ft deeper.

The Perini joint venture included Henry J. Kaiser Co., Walsh Construction Co. and Morrison Knudsen Co.

A second combine, six contractors headed by Joseph Miele Construction Co., submitted low bids totaling $19,620,182 on six contracts and bid, all told, on all 12 large sewer contracts at stake.

More than 60 mi of interceptor sewers are included in the overall project and follow in general the contours of the county's three main rivers, Ohio, Allegheny and Monongahela. Branch lines extend up Turtle Creek and Chartiers Creek to join with the other in funneling sewage to the treatment plant at McKees Rocks, on the Ohio River below Pittsburgh.

Leading another joint venture, the James McHugh Construction Co. of Chicago was named general contractor and was awarded two contracts totaling $7,778,152 for the construction of the treatment plant.

Believed unique in the history of authority financing is the $100-million bank loan floated by the Sanitary Authority to evade pushing its entire bond issue onto the market and perhaps push the interest rates up (ENR Oct. 13, 1955, p. 79).

The Mellon National Bank and Trust Co., in cooperation with 22 other banks from Pittsburgh, New York, Cleveland, Chicago and Philadelphia, teamed up to supply the money short-term for an interest rate of 2¼%.

Labeled an "interim financing arrangement," the loan will be paid back over a four-year period. The authority will wait until it feels the market is right before floating its own bond issue.

Highway Research

HRB has money for three more years of law coding

Money is now assured to finance for three years the Highway Research Board effort to assist the states in improving and codifying their highway laws. At the 35th annual HRB meeting in Washington last week, executive secretary A. E. Johnson of the American Association of State Highway Officials announced that the states had pledged funds to pay needed legal talent for the study project.

Straightening out the hodgepodge of highway laws that have accumulated in the last forty years or more is a necessary prelude to effective improvement and administration of our road systems, the meeting was told. In the federal sphere, a one-package bill was drafted by the Bureau of Public Roads, as directed by the Federal-Aid Highway Act of 1954, and is now before Congressional committees for action at this session.

Breadth and depth of the highway research field was emphasized again at last week's meeting. Nearly 200 papers reported progress in specialized aspects of research at 36 general sessions. More than 1,500 highway administrators, engineers and transportation and safety experts listened to the findings of the research people.

As one example, researchers have taken hold of the tough problem of estimating expressway traffic and have come up with methods and techniques that permit a closer approach to adequate prognosis. Similar progress is being made on other problems of economics, finance, administration, traffic, design, materials, construction, soils, equipment, maintenance and operation of highways.

The Roy W. Crum award for outstanding research achievement was awarded to three leaders in the field: Earl F. Kelley, who heads BPR's physical research branch; Tilton E. Shelburne, research director for the Virginia Highway Department, and Stanton Walker, director of engineering for the National Sand and Gravel Association.

Carl C. Saal, chief of BPR's vehicle operation's section, received the HRB award for an outstanding technical paper, "Operating Characteristics of a Passenger Car on Selected Routes."

Elected chairman of the HRB executive committee was Kenneth B. Woods, who heads the School of Civil Engineering at Purdue University.

No Faulty Concrete in Bridge Collapse

A two-way investigation has been launched this week into the collapse of a new Texas State Highway Department bridge under construction over the Brazos River on State Highway 159 between Hempstead and Belleville—about 50 mi northwest of Houston. Five construction workers were killed in the accident; three others were injured.

The span, of plate girder type 180 ft long between concrete piers 60 ft high, was being assembled on falsework and was being carried by an 80-ton erection traveller. According to reports, the traveller was setting an 85-ft, 24-ton girder section at the time of the collapse.

First reports in local newspapers said that concrete in one of the piers supporting the girders had "crumbled," but preliminary checks by Highway Department engineers indicated that the damage to the concrete—in the area under a shoe on one pier—was caused by the falling steel.

A carefully worded official news release, quoting D. C. Greer, State Highway Engineer, Monday afternoon said that the Highway Department and the contractor—the Austin Bridge Co. of Dallas—were investigating the accident. However, Greer's comment made it clear that the Highway Department was inclined to consider an overload during construction operations as the apparent cause.

The bridge, to cost more than a half-million dollars, will have an overall length of 976 ft.

Nine-state sample indicates picture for . . .

Highways—Small Change, Same Problem

The start of a new year saw no major changes in the highway construction picture for a number of states. This was indicated by a random sample of reports from ENR correspondents who also stated that—as was the case last year—financing still remains the principal problem in carrying out new road-building plans.

That fact was apparent in Delaware, where the state pushed its fight for the right to use toll bridge revenues to back bonds that will pay for approach roads; in Idaho, where the state found it must raise another $192 million if it is to meet its highway commitments over a 10-year period; in Kansas, where legislators were told that additional financing will be needed to extend the state's turnpike by 4½ mi to Kansas City, and in New Jersey, where the governor called for a $2-billion, 10-year construction program to be started.

There were other problems, of course: steel shortages, need for engineering work and the like.

A state-by-state rundown of the situation looks this way:

• **Connecticut**—Completion of the Connecticut Turnpike—scheduled for Dec. 31, 1957—may be delayed by the steel shortage. Steel company spokesmen say that if orders for the entire amount of steel needed are placed right away, delivery can be promised by April 1, 1957. Otherwise, a delay of up to seven months may be necessary. Steel requirements for bridge and pier work along the 129-mi turnpike call for an estimated 100,000 tons.

• **Delaware**—Two more barriers have been cleared on Delaware's plan to use Memorial Bridge toll money to finance $130 million worth of approach highways. The program has been introduced as a bill in the U.S. Senate—and the Bureau of Public Roads has agreed not to object to the scheme. Since Congressional approval is expected by April, Howard, Needles, Tammen & Bergendoff, New York City, have been authorized to go ahead with detailed construction plans.

• **West Virginia**—A proposed state constitutional amendment and companion bill introduced in the legislature would finance West Virginia Turnpike extensions to the Ohio and Pennsylvania lines. Under the amendment the state legislature could issue up to $200 million in bonds for the work. Other legislation would allow the State Road Commissioner to help finance toll-road construction by paying limited amounts to the Turnpike Commission.

• **Ohio**—Ohio's Highway Department will spend more than $200 million this year on its largest postwar program. Consulting engineers—to be employed for at least one-third of the program—are now busy on 29 highway improvements earmarked for contract letting in 1956 and 1957. Bid dates have been set for the first half of 1956 on eight of these projects, and six others will be placed in last-half awards.

Meanwhile, the Second Ohio Turnpike got a push forward when consulting engineers agreed to revise studies of the project. J. E. Greiner Co., of Baltimore, indicates that new data on construction factors will be ready in about four weeks. Coverdale & Colpitts, New York City, says it will have new figures on traffic and revenue in about eight weeks.

• **Kansas**—Preliminary engineering reports indicate that extra financing will be needed for a projected 4½-mi link to the Kansas Turnpike from Johnson County and Kansas City. Studies by Coverdale & Colpitts, New York City, show that it would be feasible to issue $11.9 million worth of bonds to build 2¾ mi of the expressway—including a 2,300-ft bridge over the Kansas River. But $3 million more would have to be found for a ¾-mi section on the north bank.

Continental Divide Tunnel: "Too Expensive to Build"

Colorado's highway commission has recommended rejection of all proposals for construction of a multi-million-dollar highway tunnel under the Continental Divide.

The commission—reporting to the state legislature—declared that the cost of building the toll tunnel at any of the sites surveyed so far would be prohibitive. It said the pricetag would far exceed the $16-million bond limit set on the project by the 1955 legislature (ENR April 14, 1955, p. 23).

As a counter plan, the commission suggested that the state move at once to spend $9 million for building improved 3-lane roads over Berthoud, Loveland and Rabbit Ears passes. These routes now carry most of Colorado's east-west traffic.

• **New Jersey**—Gov. Robert B. Meyner has told the state legislature that New Jersey's highway needs over the next decade will add up to $2 billion. He suggested that the state help meet the needs through a bond issue if Congress doesn't adopt a program soon that will underwrite a sizable part of the work.

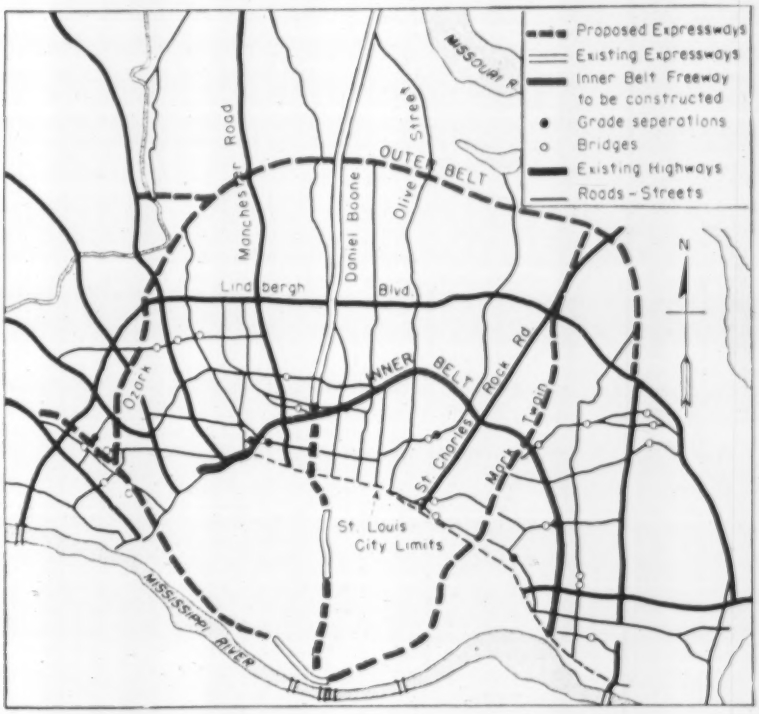
Meanwhile, the State Highway Department has presented several possible alignments for the proposed Bergen-Passaic Expressway to planning boards of both counties. Lines for the $110-million expressway are based on studies completed by Parsons, Brinckerhoff, Hall & Macdonald, New York City consultants.

• **Georgia**—A move by the legislature to permit the State Highway Department to sign a coastal toll-road pact has been declared unconstitutional by the State Supreme Court. The contract would have authorized the Ocean Highway and Port Authority of Fernandina Beach, Fla., to build a 50-mi, $25-million toll road north from Nassau County, Fla., to Brunswick, Ga. The Georgia constitution permits the state to enter into contracts with counties, cities, public authorities and similar agencies. But the court ruled that only those public authorities that can be created by the Georgia General Assembly are included within the meaning of the provision.

• **Idaho**—The Department of Highways reports that the state needs $192 million in addition to revenue based upon present income if it is to fulfill highway obligations for the next 10 years. A department study shows that road needs for the next decade total $583 million. But only $391 million could be raised under present laws.

• **Minnesota**—Some $37 million in road improvements are expected to be opened to bidding before June 30. Retention of consulting engineers has permitted the Highway Department to embark upon this six-month program—the most ambitious in its history. More than $8.5 million worth of projects involving 26 bridges and 11 trunk roads already have been farmed out to consulting engineers under laws passed by the 1955 legislature. In addition, Howard, Needles, Tammen & Bergendoff, New York City, have been engaged for engineering services on the Duluth-Superior high-level bridge project.

To break loose from the effects of growing traffic congestion, St. Louis City and County voters have approved bond issues to finance construction of three radial arteries fanning outward from the city's famed riverfront, and a start on two connecting belt loops.



St. Louis Plans $160-Million Traffic Easing

More than $160 million will be spent in the St. Louis metropolitan area within the next few years to build a system of interstate belt expressways to take care of the vehicular traffic that converges on the great Mississippi River city.

The most dramatic feature of the expressway program will be three radial arteries called the Mark Twain, the Daniel Boone and the Ozark Expressways. These will be six-lane divided highways of limited access. They are to cut across the thickly settled suburban outskirts and enter the city from the northwest, west and southwest, respectively. They will be joined by two belt highways (see map).

What gave the program the green light, after much backing and filling, was passage last year of a $110,639,000 bond issue in St. Louis proper and a $39,712,000 bond issue in burgeoning St. Louis County. Citizen's committees, public officials and the press had warned that failure to approve the measures would doom the area to traffic paralysis.

• **Planning base**—Three radial routes were crystallized in a detailed plan issued in September 1951 by the St. Louis Urban Area Expressway Report Project headed by the late Col. Malcolm Elliott, former head of the Corps of Engineers' Upper Mississippi Valley Division. They were developed in cooperation with the Bureau of Public Roads and the Highway Commission.

It was pointed out in the Elliott report that at least 10 major highways entered St. Louis from the northwest, west and southwest. The plan was to connect the Mark Twain Expressway to the new alternate U. S. Highway 40 at the Missouri River, just west of St. Charles, Mo.; the Daniel Boone Expressway with U. S. 40 in the suburb of Brentwood; and the Ozark Expressway with U. S. 66 and 61 to the southwest.

Total cost of the proposed radial expressway system originally was estimated at $158,580,000.

• **Construction plans**—With the bond issues passed and many details concerning rights of way now cleared up, the State Highway Commission has assigned construction priority to the center of the three expressways, the Daniel Boone. However, construction will begin this year not only on the Daniel Boone but also on the Mark Twain, or northwest, route.

Bids were taken Jan. 5 on a contract for constructing the estimated $2-million Market St. cut-off to carry Daniel Boone Expressway traffic from the existing Red Feather Highway over Vandeventer Ave. and railroad tracks into Market St. This is an 0.8 mi project in mid-town St. Louis.

Another $2-million construction job expected to be let in April would carry the Mark Twain from its present eastern terminus at Brentwood Blvd. in the county nearly a mile farther east toward its connection with the Red Feather link, at the western edge of Forest Park.

Before June 30, contract for substructure and street work on a mile segment of the Mark Twain Expressway in downtown St. Louis will probably be let. Estimated cost is $1.5 million. Another segment of the Mark Twain—from Florissant to Lucas-Hunt Roads in the county—also should be under contract by the end of the year.

For the present, work on the southwesterly Ozark Expressway is confined to purchase of rights of way. The speed at which the project is undertaken depends on the rate at which federal funds become available.

The county's bond issue provided funds for right-of-way purchase for the Outer Belt west of Lindbergh Blvd. It is visualized that this route, not yet approved by the State Highway Commission, will become part of a proposed federal loop highway that would encircle the metropolitan area on both sides of the Mississippi.

Also in an early planning stage is the Inner Belt highway east of Lindbergh, for which county voters authorized a $16.1-million expenditure.

Power Addition

Diversion dam would add to power at Hungry Horse

The Bureau of Reclamation currently is investigating construction of a diversion dam on the middle fork of the Flathead River and a 7-mi tunnel to carry water to the Hungry Horse reservoir on the river's south fork. It would increase effectiveness of the hydroelectric development by about one-third.

Borings along the proposed tunnel line will be made next summer, according to Charles Hazen, area engineer for the Upper Columbia River development office. Four years ago Hazen headed the Hungry Horse planning office.

A favored site for the proposed new earth-fill diversion dam (it would store 400,000 acre-ft) is at Spruce Park, about 5 mi up the middle fork from U. S. Highway 2. A 38,000-ft tunnel through the Flathead mountain range would have its outlet at Devil's Corkscrew Creek which flows into the Hungry Horse reservoir. Currently the bureau is planning for a 15,000-kw power plant to utilize a 450-ft drop at this outlet.

The Flathead's middle fork is somewhat smaller than the north and south forks and sends its spring flood waters downstream late in May and June when mountain snows melt. These waters reach downstream installations such as Kerr Dam, Cabinet Gorge site and Grand Coulee at a time when they are full and overflowing, so they are wasted.

Hungry Horse reservoir, completed two years ago, impounds 3,468,000 acre-ft and was full this year from June 28 until mid-November. The flow of the south fork on which it lies is somewhat less than the capacity of Hungry Horse.

It is estimated that diverting middle fork waters into the dam would raise its power potential about a third. With the reservoir full, 7,720 cfs produces 285,000 kw of electricity. As the head drops it eventually requires 9,000 cfs to produce the same amount of power.

Called Flood-Vulnerable Alabama Town Gets Mad

The Mayor of Huntsville, Ala., in the heart of the Tennessee Valley, last week broke a long, happy relationship with the Tennessee Valley Authority with a recommendation that the city build its own steam-power plant for use when its present contract with TVA runs out in 1960.

Apparent cause of the mayor's irritation is a report of TVA's flood control division which points to the threat of serious floods in the area of Huntsville (pop. 20,000). A flood map recently published at the request of the Alabama Planning Board is seriously questioned by the city and its engineers, but efforts that have been made so far to have its publication stopped have proven futile.

The last serious flood in Huntsville, on a tributary north of the TVA lake behind Wheeler Dam, was in 1949. TVA says an even more serious flood is still possible.

Chuting Fish—Not in a Barrel

A "ski jump" will afford safe passage for fingerling salmon past the Baker Dam of the Puget Sound Power & Light Co. near Concrete, Wash., as the result of experiments conducted this fall.

The "ski jump" is a chute extending 18½ ft from the face of the dam, producing a water trajectory that carries 130 ft beyond the face into the deep pool below the dam. It is 10 ft wide, supported below by two 8 x 16-in. steel I-beams set in pockets and grouted into the dam, and from above by suspension bars. A 2-ft opening of the spillway gate usually provides sufficient water for the chute.

Studies had indicated that the spill was necessary to prevent young salmon from being dashed fatally on the face of the dam during their down-stream passage. Complete testing of the chute was halted by flood waters, after 10,000 fingerlings had been released up-stream. Results were sufficient to indicate, however, that the chute is the answer to the problem of helping the fingerlings past the dam.

Progress Report

Interstate sanitation group marks 20th anniversary

The Interstate Sanitation Commission, first interstate compact formed to deal with water pollution control, marks its 20th anniversary this month with a proud recitation of its accomplishments. In an attractive progress report titled "Cleaning Up the Doorway to America," the New York-New Jersey-Connecticut pollution abatement body cites impressive statistics concerning its efforts to clean up New York harbor waters.

In 1936 just under 400 mgd of sewage were being treated while 700 mgd remained untreated. Twenty years later the respective figures are 1,150 mgd and 400 mgd. However, in areas abutting so-called Class A waters (used primarily for recreation and fish culture) 99% of sewage is now being treated as compared to only 43% in 1936. In areas abutting the remaining waters (Hudson and East Rivers, Upper New York and Newark Bays), only 28% of sewage was treated in 1936 while now 73% is treated. Considering only sewage receiving some form of treatment, 49% in 1936 was considered inadequately treated, and in 1956, 11%.

Progress is also measured in terms of sewage treatment plants. In 1916 there were only two in the area, in 1936 there were 53, and by 1956 the total jumped to 138 plants. During the last two decades $300 million has been invested in new treatment facilities. In 1936, sewage from only 2,700,000 people out of a total population of 9,900,000 was being treated. Today the figures are 9,500,000 out of a total of 12,000,000.

Property values along formerly polluted waterfront areas have risen sharply. In the Shore Parkway area of Brooklyn, values jumped 76% in the last 18 years.

William C. Cope of New Jersey is present chairman of ISC and Seth G. Hess is director-chief engineer.

Northwest Utility Budgets $22.5 Million '56 Construction

Washington Water Power Co. has budgeted more than $22.5 million for construction in 1956.

Biggest money item on the construction schedule is $15.7 million for hydro plant and construction at the company's Noxon Rapids project in western Montana. Washington Water Power already has spent more than $3.7 million on the 400,000 kw project, and when completed in 1960, $85 million will have been spent.

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During below zero weather in Winnipeg . . .

CCA Looks to Increase Winter Construction

Robert Legget
Staff Correspondent

Winter construction proved a most suitable theme for the 38th annual meeting of the Canadian Construction Association at Winnipeg, Manitoba Jan. 15-18.

Temperatures never went above zero throughout the meeting, and a combination of strong winds and 20-below readings reminded delegates of the significance of protection for winter jobs.

Federal Labor Minister Milton Gregg stressed the federal government's "keen desire" to increase construction work during winter periods, commenting, "It is technically possible to have much higher levels of wintertime employment than we have; it is economically efficient to have more; it is socially desirable."

Gregg's comment seemed to stem from the fact that during his visit to Winnipeg, he had to deal with an awkward local problem of shutdown on construction of an $8-million post-office building being built for the Federal Public Works Department by the Foundation Company of Canada. The official explanation said that appropriation had run out, but the shutdown was locally linked to the usual winter slowdown. Gregg announced that new funds had been arranged and work would resume at full strength immediately, with contractors being paid extra for dealing with winter conditions even though completion date will thereby be considerably advanced.

The spectacular $5-billion volume of Canadian construction during 1955 was the highlight of reports submitted at the meeting, with confident anticipation that this record volume will be repeated this year providing that similar satisfactory labor relations continue and no difficulties are encountered regarding basic materials.

General contractors held a special closed session to hear reports on prospects for steel and cement supplies during the current year from industry representatives. The general impression at subsequent open meetings was that the cement situation will not be too critical but that the present structural steel shortage throughout Canada will probably continue although it won't get worse.

The perennial problem of "bid peddling" and relations between general and subcontractors was again a major topic of discussion in hotel corridors and backrooms, and the strength and unique character of the CCA was again shown by discussions of this problem by separate sections of general and trade contractors and by work of a joint standing committee on contractor relations.

The report from this committee again unanimously voted continuing support for a code of good practice, adopted last year, and for the principle of such arrangements as bid depositories at local level as a practical means of improving contractor relations. There was much discussion of the operation of such a bid depository in the Toronto area through the past nine months which has met with generally satisfactory results, and others operating in Vancouver, Calgary, Regina, Winnipeg and Lakehead. It was predicted that 20 depository systems may be in operation by the end of 1956.

The contractor relations committee was continued for another year, with instructions to survey operation of trial bid depositories and make a full report at the earliest possible time to the executive committee.

The association officially adopted a plan to award a $2,000 fellowship for postgraduate study in the building field to a "promising young engineer in construction work," in keeping with its desire to assist in further development of the industry.

Steady progress was reported with the use of standard forms for construction contractors, prepared jointly with engineers and architects. But disappointingly slow progress was seen with a proposed guide for bidding procedures, due to difficulties with architects.

Highlight of CCA's own business was a full report on the opening of a headquarters building, called Construction House, in Ottawa—paid for from current funds and member subscriptions.

Alan Turner Bone of Montreal was elected President, succeeding W. G. Malcom of Winnipeg, with Tullis Carter of Toronto and H. J. Ball of Kitchener, Ontario as national Vice Presidents. All these men are general contractors operating their own companies, except Bone, who is President of J. L. E. Price and Company, Montreal.

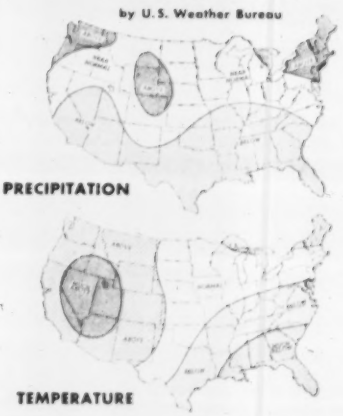
Contract Is Awarded for Largest Bolted Skyscraper

A contract for the steel framework of what will be the world's tallest rivetless skyscraper was awarded this week to Bethlehem Steel Co. All 13,000 tons of steel for a 38-story building to go up in New York City will be connected with high-tensile bolts.

The skyscraper, to adjoin Rockefeller Center, will occupy the entire Fifth Ave. block front between West 52nd and 53rd Sts. It is scheduled to be completed in May 1957.

Designed by architects Carson & Lundin for Tishman Realty & Construction Co., Inc.—both of New York City—the new structure will contain more than 1,000,000 sq ft of net rentable space. It will feature 24 tower floors of 18,000 sq ft each and 14 lower floors ranging from 56,700 to 28,400 sq ft each.

30-DAY WEATHER OUTLOOK
Mid-January to mid-February
by U.S. Weather Bureau



The Weather Bureau's 30-day outlook for mid-January to mid-February calls for temperatures to average above seasonal normals in the western half of the country. East of the Mississippi generally below normal temperatures are indicated, except for near normal in the Great Lakes area and the Northeast.

Precipitation is expected to be subnormal in the southern half of the nation. Greater than normal amounts of rain and snow are predicted for the Northeast, Northwest, and northern Rocky Mountain states, with near normal elsewhere.

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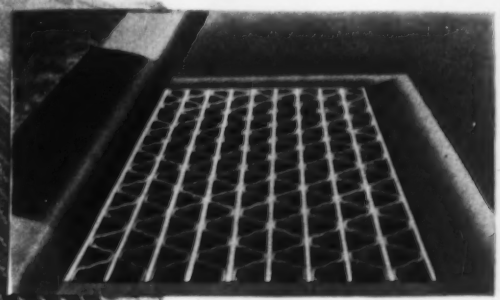

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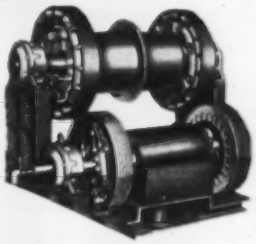

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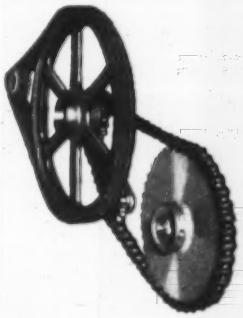

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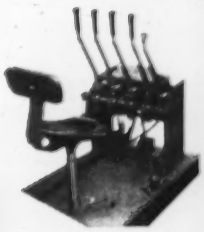

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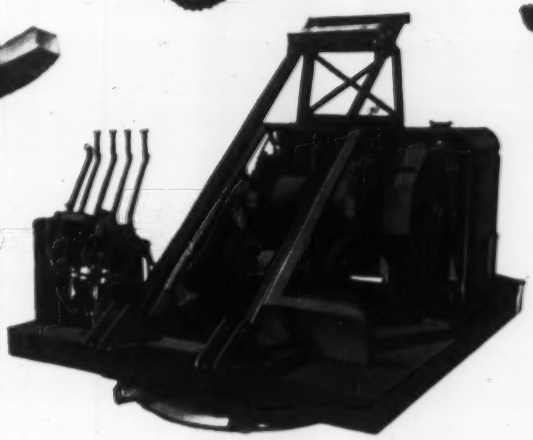

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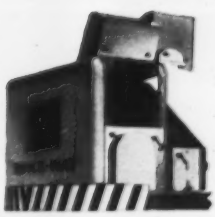

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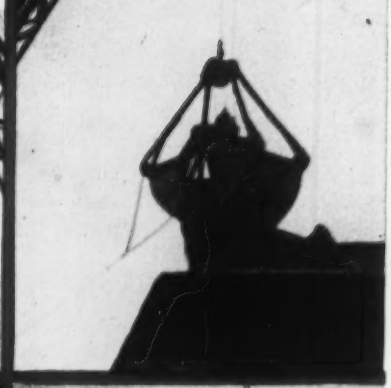

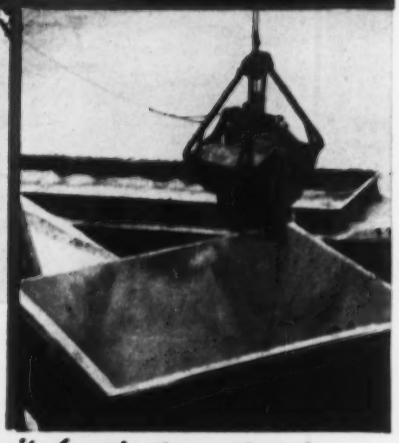

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New Study Called on Lake Washington Bridge

The Second Lake Washington Bridge Metropolitan Committee of Seattle has selected DeLeuw, Cather & Co., consulting engineers of Chicago, to recommend a route for an $18-million second bridge across Lake Washington east of Seattle.

Necessity to re-examine the project became obvious when the Seattle City Council late last month unanimously voted to oppose "invasion" by the bridge approaches of the University of Washington arboretum which contains a valuable collection of plants.

The firm was recommended by William A. Bugge, State Highway Director, and W. E. Parkern, Seattle City Engineer, with the state to pay costs of the survey. A decision is expected within 90 days.

Western Pipeline Projects Have $292-Million Price Tag

New developments in two long-discussed pipeline projects have been disclosed in Texas and Canada.

Construction of a $152-million natural gas line for Westcoast Transmission Co., Ltd., got under way this month along a 650-mi route from Alberta, B. C., to Huntingdon, on the international border. The 30-in. steel line, which will have an ultimate capacity of 660,000,000 cu ft of gas per day, is scheduled to be completed in the fall of 1957.

The second project involves construction of a 30-in. oil pipeline from Texas to California. Several years ago West Coast Pipeline Co. announced plans to lay a 1,000-mi, 24-in. line. Now the company has been reorganized and its owners—40 independent Texas oil producers—have proposed a larger line plus a $20-million refinery in the Phoenix area.

Dirty Work at Crossroads Traced to Paving Program

Delaware's 10-year project to hard surface all its dirt roads has led to some strange sights—cars moving back and forth over the same spot, people stamping on the ground.

The hustle and bustle at rural crossroads can be blamed on the provision that dirt roads receiving the most use will be given priority in the state's $10-million paving plan. Residents in each community have a particular dirt road they want at the top of the conversion list. And they have been backing up their beliefs by building up a high tally over mechanical counter cables installed by the highway department.

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New Autocar SRDD heavy-duty tandem axle is a real "All-American" for the tough jobs. Rating—44,000 lbs. Four-wheel straight-type drive with inter-axle differential, spur-type with cab-controlled lockout. Quality built for the tough operating conditions.

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The development of Armco SMOOTH-FLO Sewer Pipe makes it possible for the first time to design and construct a sewer having top flow capacity—with full assurance that it will remain that way through long service.

Flow capacity of each length of SMOOTH-FLO Pipe is high to start with. A full bituminous lining completely fills the corrugations. And when the pipe is installed, bolted coupling bands formed to fit the pipe corrugations make joints strong and tight. Sections can't pull apart or be forced out of alignment. Flow capacity stays high from one end of the installation to the other. And the lining material itself is extremely dense and durable—with proved ability to stand up under severe service conditions.

Write us for complete data about Armco SMOOTH-FLO Sewer Pipe and other economical Armco Sewer Structures, including ASBESTOS-BONDED and PAVED-INVERT Pipe. There is a size and type for practically every sewer job. Armco Drainage & Metal Products, Inc., 3316 Curtis St., Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO SEWER STRUCTURES

ARMCO

WELLPOINTS plus sump pumps were needed to dry the excavation for a 109 in. dia pipe crossing of the Santa Ana River in California. Excavation in the 1500-ft river bottom trench went as much as 49 ft below original stream bed level.

Tough River Crossing for Large Pipe

A southern California pipeline river crossing job, requiring a 109-in. dia pipe to be installed as much as 49 ft below riverbed level, proved to be a tough construction operation because of a continual battle against groundwater. Wellpoints could not do the entire job due to peculiar sub-surface conditions. Water was finally kept down by using many pumps working out of sumps.

Welders, too, had to race against time. As much as 100 man-hours were required to weld a single joint.

The pipeline is the new lower feeder for the Metropolitan Water District of Southern California—part of an $85 million expansion program. The river is the Santa Ana, and contractor on the $2.6 million job is Ukropina-Polich-Kral & Ukropina.

Involved in the UPK&U contract is almost 2½ miles of 109 in. dia welded steel pipe. The pipe has spun mortar lining and a gunited coating. Only 1,500 ft of the total length crosses the Santa Ana River. Here the plans call for poured-in-place concrete encasement with thickness at least 18 in. where the pipe is buried the deepest.

• Stream flow reduced—The Santa Ana River is typical of many southwestern streams in that there is little flow in the late summer and early fall. But during the past several years summer flow has been increased by discharge into the river of 165 cfs from MWD's upper feeder for downstream ground water recharge. To accommodate the river crossing construction, this discharge was cut off for several weeks starting in August. Result was reduction of flow in the stream to a dry season natural flow of about 45 cfs. The reduced flow also helped construction a few miles downstream of a smaller pipeline—the Santiago lateral.

During construction operations, the reduced flow of the river was channeled through a temporary canal on the left bank. Work on the river crossing started on the right bank and proceeded across. Depth of excavation gradually got greater as the pipeline proceeded across the riverbed until it reached a maximum of 49 ft below natural streambed level near the left bank. This meant that first stages of the river crossing were easy. The final stages proved much more difficult.

The contractor's plan was to keep his work dry by using wellpoints. And this worked fine for much of the crossing. As excavation proceeded a four-stage wellpoint system was installed. First and highest stage was 1200 ft long and included wellpoints on 4 ft centers. Second and middle stage was 1,000 ft long and had wellpoints at 2 ft centers. These two stages were on the upstream side as was the third stage that was 300 ft long with wellpoints on 2 ft centers. The fourth stage, also 300 ft long, was on the downstream side and had wellpoints at 2 ft centers. The wellpoint system was pumped into two 14 in. discharge lines using a total of eight 10-in. pumps.

• Sump pumps required—But even with this wellpoint system, the contractor could not keep ahead of incoming water for the last 400 ft or so of the crossing. Water came not so much from the benched river channel as from the natural watertable.

First attempt to lick the watertable problem was by sinking wells. This didn't work in one instance as the well encountered a sandstone formation that wouldn't permit pumping. In another case enough quantity could not be developed.

Final solution to the water problem was use of two large-size sumps and many pumps. The sumps were 7 and 8-ft dia. And at the maximum there were six pumps (three 6-in., one 8-in., and two 4-in.). These pumps were operated on a 24-hr basis for almost

a month—as, of course, were the pumps on the wellpoint system. This combination successfully kept the watertable down, although at the lowest point water was only 0.1 ft below the bottom of the concrete base slab.

After constructing the pipeline most of the way across, the river flow was returned to the original channel from the temporary canal on the left bank. Placing the last few lengths of pipe in this section was much less difficult. One of the reasons was that this part of the crossing wasn't quite as deep as the rest. This final section was dewatered with wellpoints plus two 4-in. pumps pumping from sumps near the channel.

• **Welding bottleneck**—Pipe in the river crossing was designed for a 650-ft head and made of 1⅞ in. thick plate in 30 and 31-ft lengths. Procedure was first to excavate and pour a concrete base slab, then to lay pipe, weld it and encase it.

Bottleneck in the construction was welding. Each double-welded lap joint took 80 to 100 man-hours to weld. This involved nine passes of electric welding on both the outside and inside fillet weld of the lap joint. Further complicating the welding were the adverse conditions caused by difficulty in keeping the bell holes dry.

The contractor had at least 15 welders continuously on the job. Welding was also required on other pipe not involved in the river crossing. So the procedure was to keep the welders busy on this other work. And as soon as the river crossing joints were ready, the welders would be brought in to literally swarm over the pipe.

The concrete encasement has several purposes. It is designed to withstand the exceptionally heavy external loading of the deep earth cover. Also, it renders the pipe secure against external corrosion, overcomes buoyancy of the empty pipe and provides anchorage.

Pay width of the trench was only 11 ft 4 in. although much more excavation was required. Result was a bid figure of $1.60 a cu yd for excavation. Backfill in the pay width ran 60¢ a cu yd. Concrete for pipe encasement was bid at $24 a cu yd, with cement separate at $5 a barrel. Pipe cost was $160 a foot. With these figures, cost of the 1500-ft long river crossing ran about $500,000.

Robert B. Diemer is general manager and chief engineer of the Metropolitan Water District of Southern California. All design work is under direction of Robert A. Skinner, assistant chief engineer. Supervising construction is Henry J. Mills.

General superintendent for UPK&U is Paul Ban.

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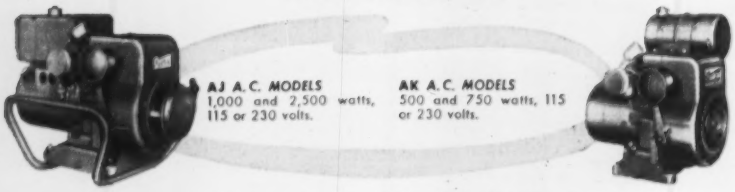

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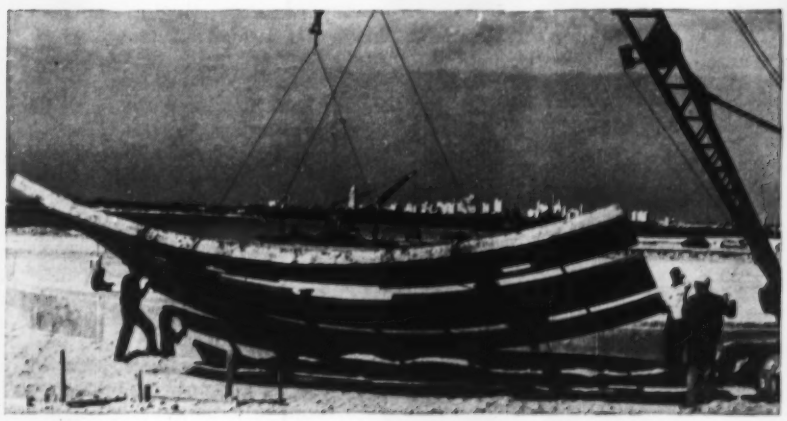
The steel aquaria under construction. 80 ft, 565,200-gallon tank in foreground, with 50 ft, 260,252-gallon tank in rear. Acclimating flume connects both tanks

Entrance of the Seaquarium, on Rickenbacker Causeway, Miami, Florida

One of the world's largest collections of tropical fish and marine animals is on brilliant display in Miami's new Seaquarium—with its great steel tanks fabricated and erected by Pittsburgh-Des Moines. The tanks are unique, with walls containing double rows of big show-windows, resting on concrete bottoms. ● Many design and construction problems were encountered, requiring special solutions based on P-DM's broad engineering and construction resources. ● Let us quote on your particular needs.

Aerial view, showing coral boulders on tank floor affording shelter for fish. Tiered outer decks afford visitors surface and underwater viewing



Prefabricated welded segment of tank goes into position on concrete base

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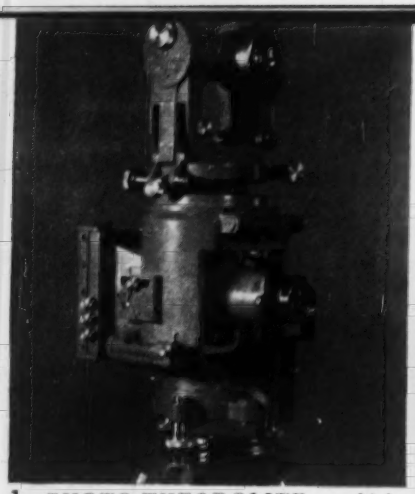
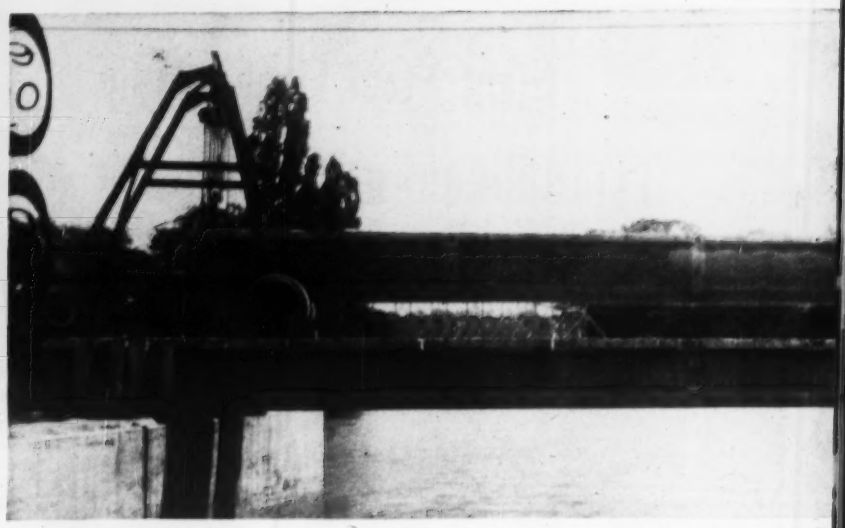


1. PHOTO-THEODOLITE, combining theodolite and photogrammetric camera, is one means of measuring deflections.



LOAD TEST of prestressed beam for new Ottawa bridge was made with another beam as the load

Now Photos To

Ask most engineers how to measure deformations of a structure, and they'll say use a dial gage—or an electric strain gage. To these conventional methods can now be added a new one that seems to have several advantages over the older systems:

Not only can it be used to measure the deformations of structures, but it

How the Single-Camera Method Works

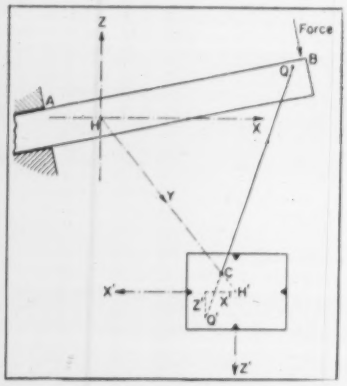


Figure 1

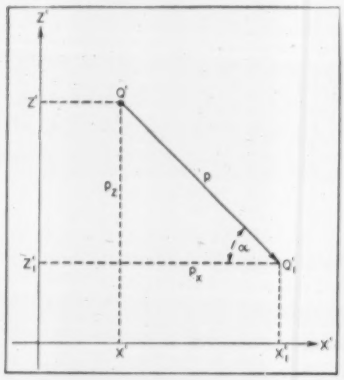


Figure 2

Referring to Fig. 1, a beam AB is clamped at A. If a force is applied, say at B, the beam will deflect in a vertical plane X-Z. At a given distance Y from the beam, a photogrammetric camera is set with its principal axis CH' normal to the beam. C is the center of perspective. Thus, the X'-Z' plane of the photographic plate is parallel to the X-Z plane.

A photograph of the undeflected beam is made and any point Q on the beam with coordinates X, Z is imaged to point Q' of the photographic plate with coordinates X', Z'. If a force is applied, the beam will bend, moving the point Q on the beam to Q_1 (not shown) with coordinates X_1 and Z_1. After the deflection another photograph is made with the same camera in the same position. The image point Q_1' (Fig. 2) of the point Q_1 on the beam will now have new coordinates X_1' and Z_1'.

Suppose the image points Q' and Q_1' are located in a coordinate system as shown in Fig. 2. Then, the line $Q'Q_1' = p$ represents the image of the line of movement of point Q. This is called the deflection parallax.

Let p be divided into two components, p_x and p_z in the x and z directions, respectively.

With Y the distance from the lens to the beam and f, the focal length of the camera, the ratio Y/f becomes a constant factor, say M. And the deflection in the x direction is

$$D_x = \frac{Y}{f} p_x = M p_x$$

Similarly in the z direction:

$$D_z = \frac{Y}{f} p_z = M p_z$$

And the resultant deflection is

$$D = (D_x^2 + D_z^2)^{1/2} = M(p_x^2 + p_z^2)^{1/2} = M p$$

To arrive at the constant $M = Y/f$, it is not necessary to measure the distance Y. Instead, a known distance L between two points on the object can be used. Let L' be the length of the image of L on the photographic plate. Then, the scale factor becomes $M = L/L'$.

The parallax, p, is measured by means of a stereo-comparator or stereo-autograph. If both photographs are placed in, say, a stereo-autograph, and oriented so that either D_x, D_y or D are changed into a horizontal parallax, a three-dimensional optical model of the test object can be seen. Deflected parts of the object will appear to be bent toward or away from the observer and the components p_x, p_z or p can be measured. Multiplying these values by M will yield the desired deformations.

Photos yielded deflections.

2. STEREOMETRIC CAMERA provides two cameras at a fixed distance, with their optical axes parallel, for a second method of measuring deflections.

Do What Strain Gages Did

can also measure corrosion in water-tanks, deformation of a propellor in motion, or valuable pieces of sculpture and architectural detail in order to repair or replace them.

The method is photogrammetric measurement—like that used in aerial surveying. Use of photogrammetry for such purposes is described in a report given by C. Moser and W. R. Schriever of the National Research Council, Ottawa, Canada, before the "Symposium sur l'Observation des Ouvrages realise au Laboratorio Nacional de Engenharia Civil," at Lisbon, Portugal.

In structural testing, this method offers certain advantages, the authors say, and its accuracy, although limited, is satisfactory for many applications. One of the main advantages is the saving of time and effort before and during a test. Before a test, setting up special equipment, such as supporting systems for dial gages, is largely eliminated, and during a test, the time required for many separate readings is reduced. An important advantage is that measurements are reproducible at any time. Also, additional information, which may be desired later, can often be obtained from the same photographs.

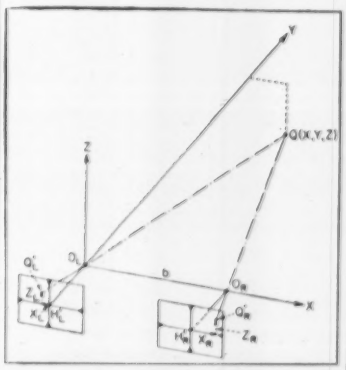
A disadvantage is that results of measurements are not immediately available, since the photos must be developed. This makes it hard to follow plastic flows and their impending failures. Another drawback is the high cost of the photo evaluating equipment, which may make it unattractive for small-scale users. This can be solved by sending the photographs to a photogrammateric firm for evaluation.

• **Two ways to do it**—Two methods to measure deformations are described in the report: The single-camera and the two-camera method. In the single-camera method where deflections in one plane are to be measured, photographs are taken at the desired times, and the measurements are determined from pairs of these single photographs. In the two-camera method, for deformation in three dimensions, the measurements are based on stereo-photograph pairs of the object.

• **The single-camera method**—A single photogrammetric camera is set up with its optical axis normal to the main plane of the object. The object is photographed in its undeformed state. Further photographs are taken as the structure is deformed by the applied loads. To evaluate the deformations, the undeformed photo is combined with any succeeding one.

Evaluation is done in a stereo-comparator or in a stereo-autograph—stereoscopic instruments to measure parallaxes and coordinates of image points. Both negatives are placed in the instrument, and after properly ori-

Two-Camera Theory



In this case, both camera axes and the reference base lie in one horizontal plane with the camera axes parallel to each other and normal to the base.

Referring to figure, let Q = point whose movement is to be measured; O_L = center of perspective of the left camera; O_R = center of perspective of the right camera; b = base; $f = H_L'O_L = H_R'O_R$ = focal length of cameras; Q_L' = left image point with coordinates X_L, Z_L; Q_R' = right image point with coordinates X_R, Z_R; $p = X_L - X_R$ = parallax.

Coordinates X, Y, Z of point Q are determined by:

$$X = \frac{x_L}{f} Y;\ Y = \frac{bf}{p};\ Z = \frac{z_L}{f} Y$$

If the photographs are evaluated in a stereo-autograph, no computation is necessary to find the coordinates X, Y, Z. The coordinates of any point Q that appears on both photographs can be read directly.

enting them, the observer sees a three-dimensional optical model of the object. The parallax is measured optically by placing a floating mark (black dot) on the surface of the visual model. The shift of the floating mark from a reference plane to a point on the surface of the model is equal to the parallax of the point.

For an example, consider the measurement of the deflections of a beam by this method. Here, both negatives are rotated until the beam appears to be in a vertical position. Then the photograph of the undeflected beam and that of the deflected beam form a stereopair in which the deflection appears as a horizontal parallax. In other words, the observer sees an optical model of the beam in which parts not affected by the deflection appear to lie in one plane, and those parts of the beam that are deflected show a horizontal parallax or appear to be bent toward or away from the observer. The floating mark is placed on every surface point of the optical model where the deflection is desired. The ends of the beam—the points that define the reference line—must be visible on the photos. From these measured parallaxes, it is now possible to measure the deflections of the beam.

The main advantages of this method are:

- Only one photogrammetric camera is required.
- Orientation of the negatives in the stereo-plotting machine is simple.
- The determination of deflections in a plane parallel to the plane of the photographic plate is simple and precise.

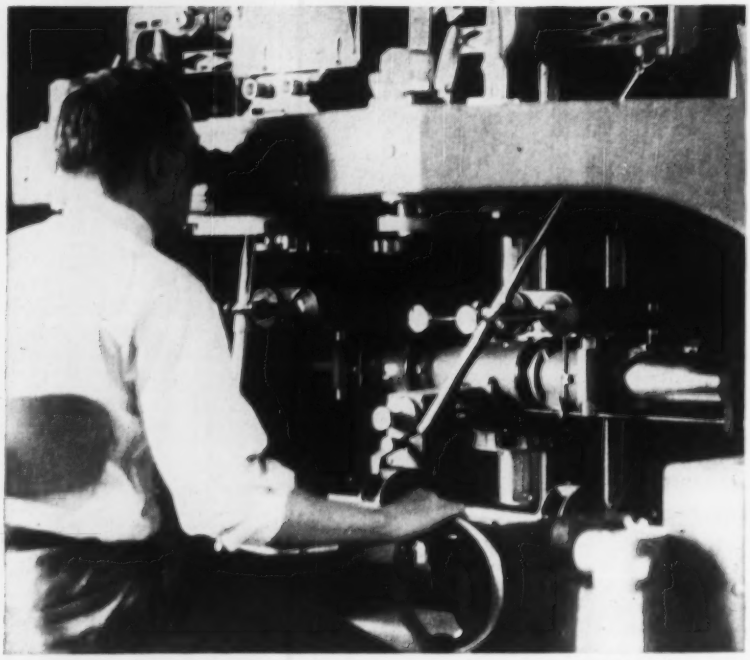
Possible disadvantages are:

- Only deflections in planes parallel to the plane of the photographic plate are measurable.
- The orientation of the camera must be accurately maintained.

• **Two-camera method**—Two similar photogrammetric cameras are oriented at known distances from the object to be photographed. In the simplest case, the optical axes of the cameras are parallel to each other, horizontal and normal to the line joining their stand points. Special stereometric cameras, designed to meet these conditions, are composed of two identical cameras mounted rigidly at the ends of a metal tube so their optical axes are parallel to each other and perpendicular to the base.

Sometimes two separate cameras are used, in which case there is the advantage of being able to select a base length that is suitable to the object and to the accuracy desired.

In this method the stereometric cameras can be placed in any position, but it is better to have the principal axes of the cameras about normal to the main plane of the object. With the cameras so oriented, pairs of photographs are now made at various stages of the structure's deformation. For evaluation, the photos are placed in a stereo-autograph. This is preferable to the stereo-comparator in the two-camera method in that it permits the exact reconstruction of the optical model and its precise orientation. Any needed measurements can be taken from this model. These measurements are given in spatial coordinates, from which any required deflections may be derived.



STEREO-AUTOGRAPH is used to evaluate results of two-camera method.

The main advantages of this method are:

- Deformations in any direction can be determined.
- Since both stereo-photos are made simultaneously, moving objects may be photographed.
- For the same reason, lighting conditions are identical in each photo; this simplifies their evaluation.

Possible disadvantages are:

- More equipment is needed.
- Orientation of the cameras must be determined to a high degree of accuracy.

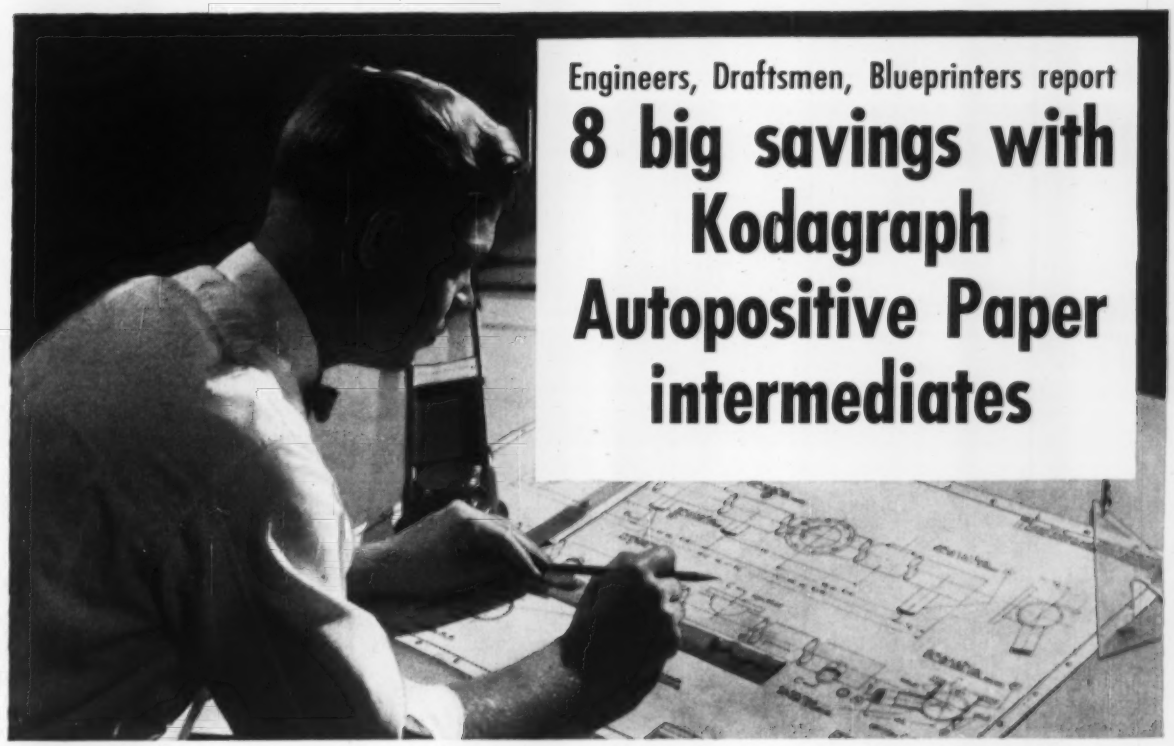
• **Where to use**—The report gives specific examples of the application of the method to loaded wood beams, a loaded roof truss and a railroad track deflected by a moving load.

Another example is the construction of a new bridge across the Rideau River in Ottawa. Here, the deflection of a prestressed concrete beam under a load of 7.5 tons was determined by the single-camera method. Since the river made it difficult to measure the distance from the camera to the beam, a series of markers were mounted at equal intervals along the upper edge of the beam, and the ratio between the actual deformation and the measured parallax could be determined by the ratio between the length of an interval on the beam and the corresponding length on the negative.

• **Cost and time**—In the single-camera method, parallaxes and coordinates of image points are measured in a stereo-comparator. Cost of a good stereo-comparator is about $4,000. The time of positioning two negatives in the stereo-comparator to obtain an optical model of the object is roughly ten minutes. To obtain sufficient accuracy, the parallax of a point will be measured repeatedly, say five times. Each measurement requires less than one minute.

In the two-camera method, two cameras of the same characteristics take the photo simultaneously. A stereo-autograph is used to measure the spatial coordinates of image points. These instruments cost about $40,000.

In this method, the time of setting two negatives to obtain an optical model of the object varies from ten to fifteen minutes, depending on the skill of the operator and the nature of the object to be measured. Once this is done, it takes less than one minute to place the floating mark and read the spatial coordinates.



Engineers, Draftsmen, Blueprinters report

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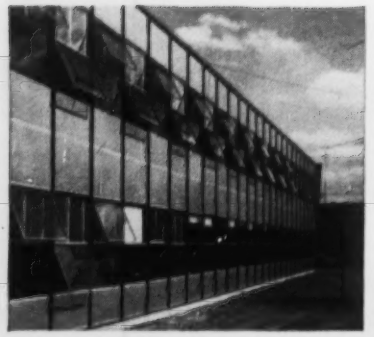
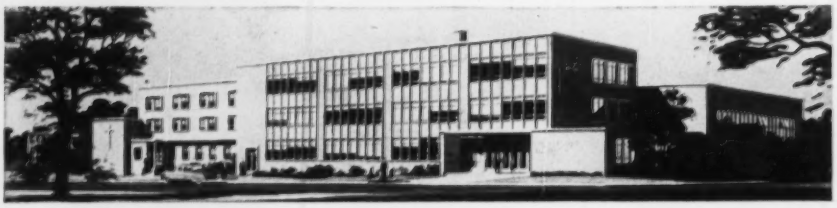


Michigan Bell Telephone Company, Port Huron, Mich. Smith, Hinchman and Grylls, Inc., architects. E. J. Kahmann Co., contractor.

Fram Office Building, East Providence, Rhode Island. The Architects Collaborative, architects. Gilbane Building Co., contractors.



School and Convent, Church of the Holy Cross, Bronx, N. Y. York and Sawyer, architects. James King and Son, Inc., contractor.

Clemson Barracks, Clemson College, South Carolina. Lyles, Bissett, Carlisle and Wolff, architects. Daniel Construction Co., contractors.

Animal Science Building, University of Arkansas, Fayetteville, Ark. Ginocchio, Cromwell & Associates, architects. Harmon Construction Co., contractor.

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United Airlines, Midway Airport, Chicago, Ill. Skidmore, Owings and Merrill, architects. Algot B. Larson, contractor.

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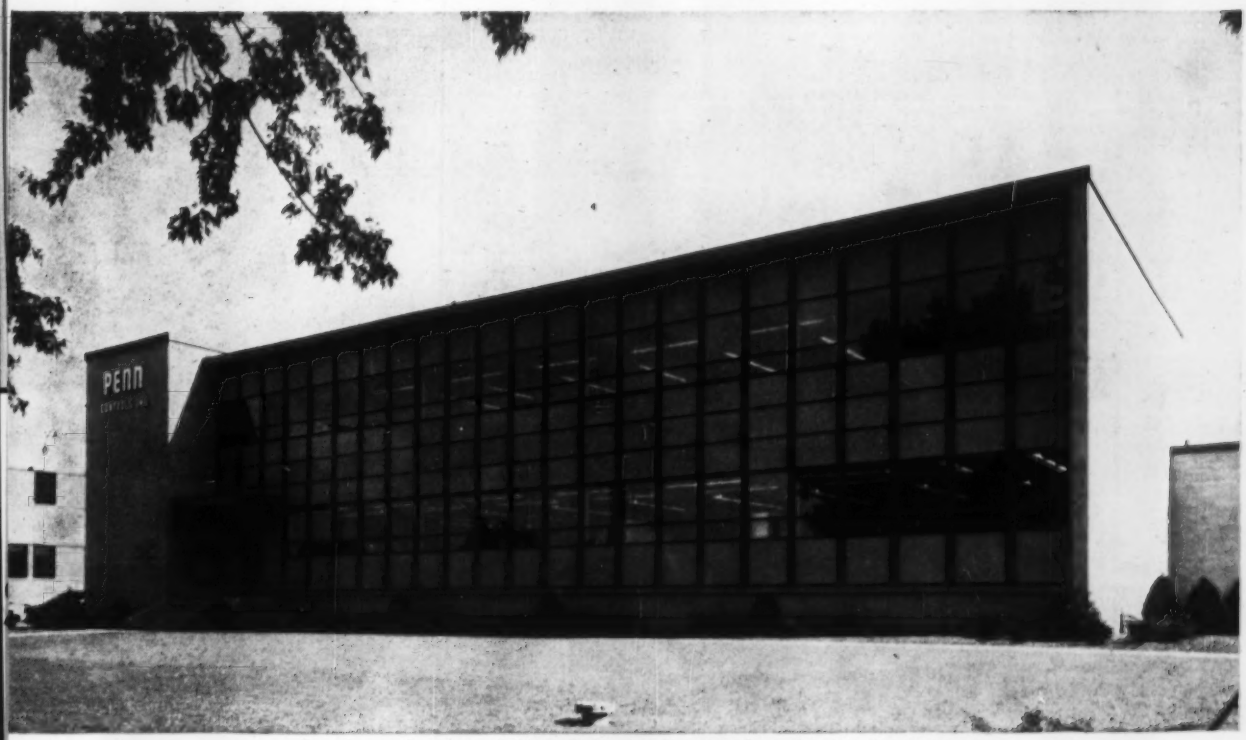

Penn Controls Engineering Building, Goshen, Ind. The Austin Co., architects and contractor.

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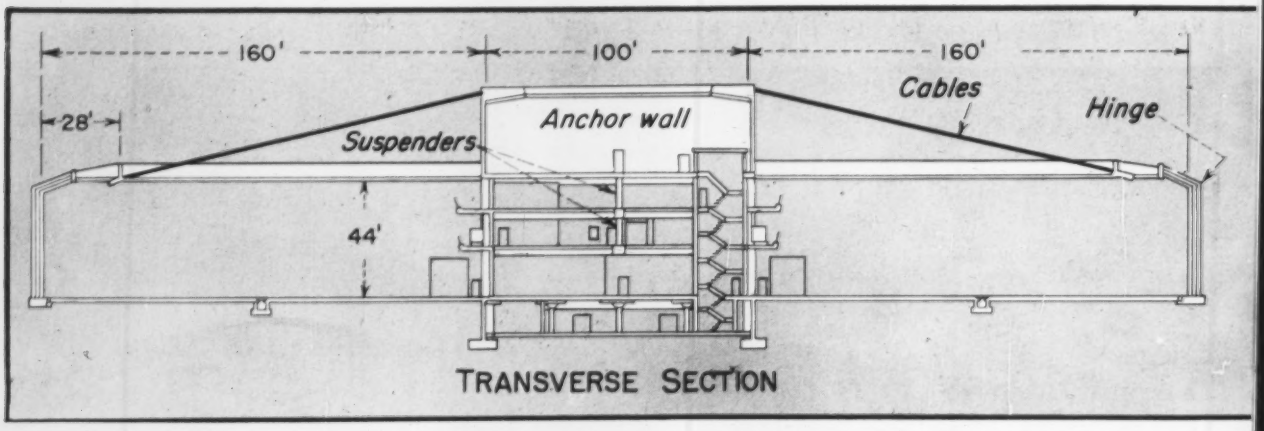


Giant folded-plate concrete roof for overhaul hangar relies on cables, symmetry, a post-tensioned anchor-

New Concept In Hangars—Cable-

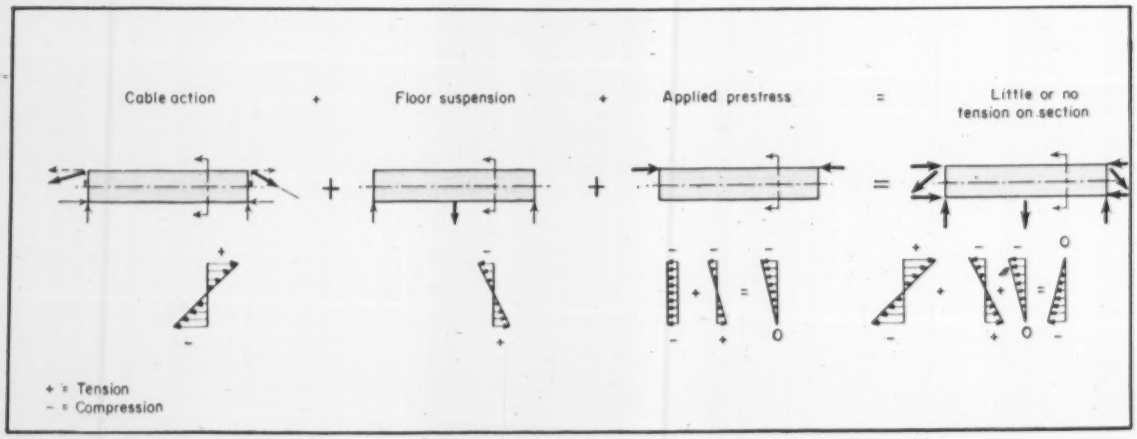
Column-free space—130,880 sq ft of it—will be provided in each main bay of an $8 million airframe overhaul building being built at a new Kansas City, Mo., airport. Omission of columns is made possible by cable suspension of two thin-shell, corrugated concrete roofs on opposite sides of a central shop and office section, which serves also as an anchorage for the cables. The roofs, each 818x150 ft (plus a 10-ft door overhang), cover enough space to house nine Constellation-type and four Martin 4-0-4-type aircraft simultaneously.

This unusual facility forms part of an $18.7 million overhaul base that Kansas City, Mo., is erecting 15 miles northwest of the metropolitan area for lease to Trans World Airlines. This base, in turn, is part of a larger city project, a new airport to be called the Mid-Continent International Airport. TWA will be the first major tenant at the new site.

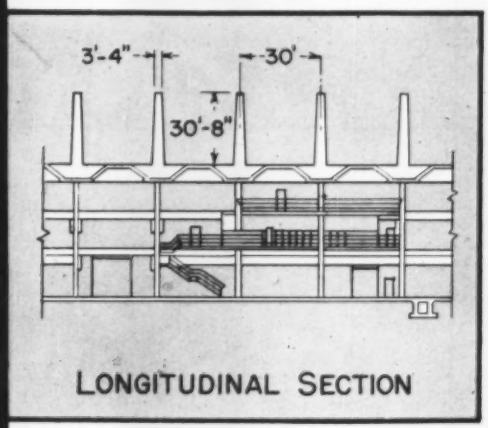
The overhaul building includes, in addition to the two large overhaul areas and the central three-story shop and office section, a 54x100-ft three-story office projection at one end, and a 145x100-ft one-story service structure at the other, resulting in overall dimensions of 1,015x420 ft.

The suspended roofs are thin concrete shells corrugated normal to the longitudinal axis of the building. Their full projection each side of the center section is 150 ft, with a distance of 132 ft between the anchorage and point of suspension.

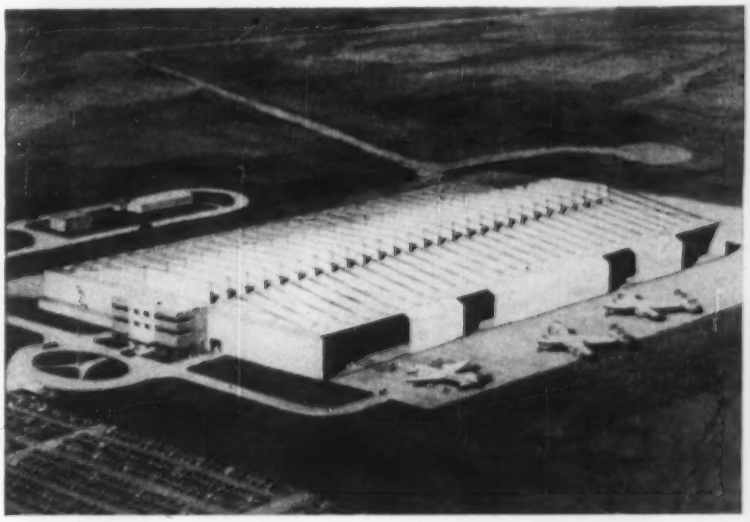
Cables supporting the roofs are anchored in 30-ft-deep concrete walls that span 100 ft between the building columns of the central shop and office section. There are 28 of these "anchor walls" spaced at 30-ft intervals along the length of the building. Four cables extend from each end of the individual walls to provide the support for the roof. Each cable consists of four 2½-in.-dia strands each with a



Superposition of forces acting on anchor wall results in little or no tension across section depending upon the live load condition. Reinforcing in top and bottom of the wall takes tensile stresses.



age, and hung floors for stability



Suspended Folded-Plate Roof

tensile strength of 752 kips. At the point of suspension on the roof, they are received by long (7-ft 9-in.) steel sleeves, 10 in. in diameter, which are buried in the concrete.

• **Design of the roof**—Varying from 3½ to 7 in. in thickness, the corrugated shell is designed to carry loads as a folded plate (ENR Sept. 2, 1954, p. 40), with the beam action of the corrugated section providing the support for loading parallel to the direction of suspension.

Corrugations have a pitch of 30 ft and a rise of 5 ft 9 in. The designers have used this 5-ft 9-in.-depth to advantage by anchoring the inclined cables in the valleys of the corrugations. With the low attachment, the horizontal component of the cable thrust produces a negative moment in the roof, which tends to counterbalance positive moments from loads.

For live load, a snow load of 30 psf was assumed over the entire area of the roof. A vertical wind load was also assumed, consisting of a variable uplift pressure ranging to a maximum of 60 psf at the leading edge of the roof. The roof was designed in the transverse direction for a horizontal wind load of 30 psf acting on the entire length of the building. For longitudinal strength, the roof was designed for a load of 30 psf on the end wall and end anchor wall, plus a load of 15 psf on all other anchor walls.

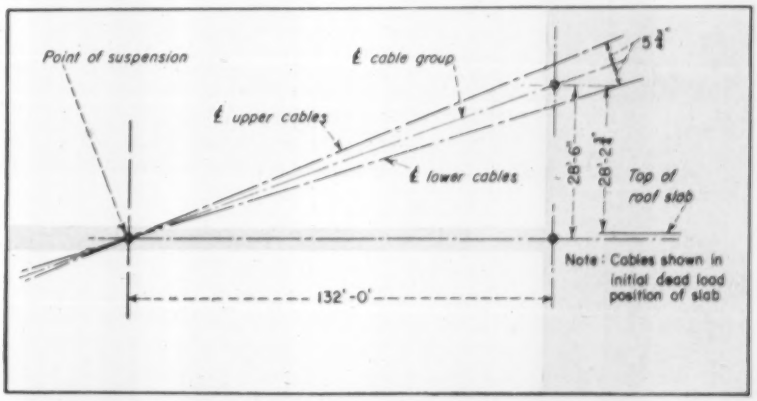
• **Design of cable anchorages**—Anchor walls serve the dual function of anchoring the cables and carrying the second and third floors of the central shop and office section as a concentrated load at midspan. The floors are suspended on four 2½-in. dia bars at each wall.

The advantage of the design is that the combined loads from cables, roof and suspended floors result in stresses in the anchor walls that act to counterbalance each other. The cables produce high negative moments in the anchor walls. Counteracting this, the weight of the suspended floor system, plus the weight of the anchor walls and the roof of the center section, act downward on the walls producing counterbalancing positive moments.

It is possible to have tensile stresses induced in either the top or bottom of the walls, depending upon loading conditions. In the bottom, reinforcing bars take care of the tension. In the top of the walls, the designers use a combination of reinforcing bars and two post-tensioning cables that run the length of each wall. This combined-steel design was necessary, because the cross section of the wall was only large enough for two tendons in addition to cable anchorages.

• **Design of hangar doors**—The doors will be horizontal-sliding, telescoping metal structures that are power operated. They will be capable of providing a maximum opening of 540 ft along the hangar's 816-ft. frontage.

The design of these doors imposed another difficult problem, since it has to allow for the free deflection of the edge of the roof to which the doors



Cables in elevation—two pairs extend from each anchor wall (right) to a point of suspension 18 ft from the end of the concrete roof.

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Just before this photo was taken, this Butler building was wrapped in flames from an adjoining fire.

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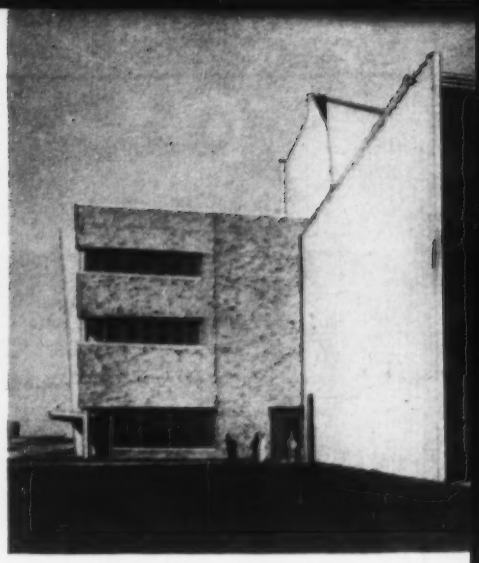
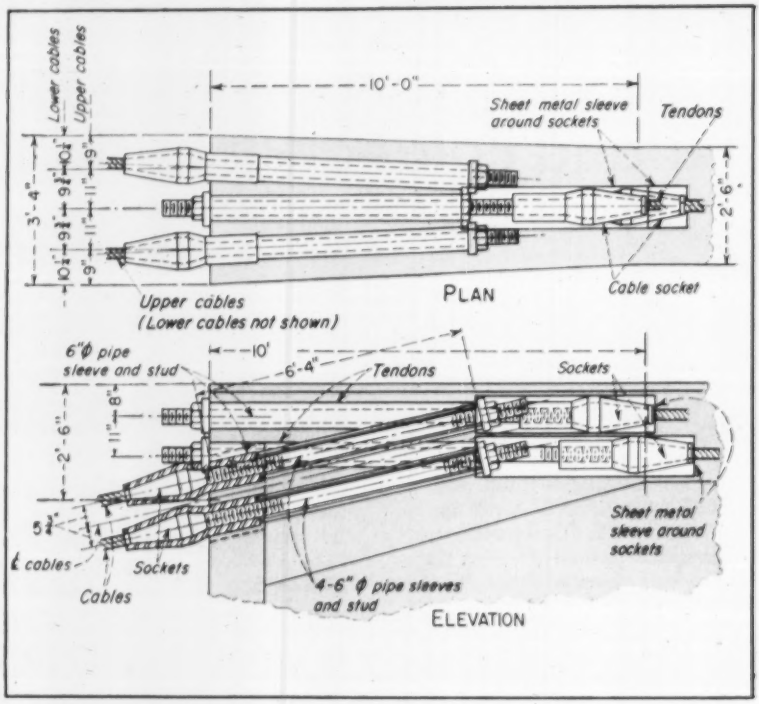
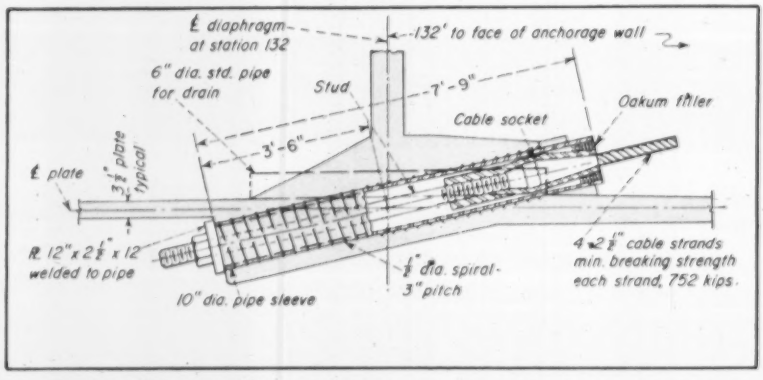
. . . Hangars

Giant Constellations fit with room to spare in hangar where underside of folded-plate concrete roof is visible. At left is 3-story office annex. Telescoping doors have hinge (not visible) at break to take up deflections due to variations in the length of the cables.

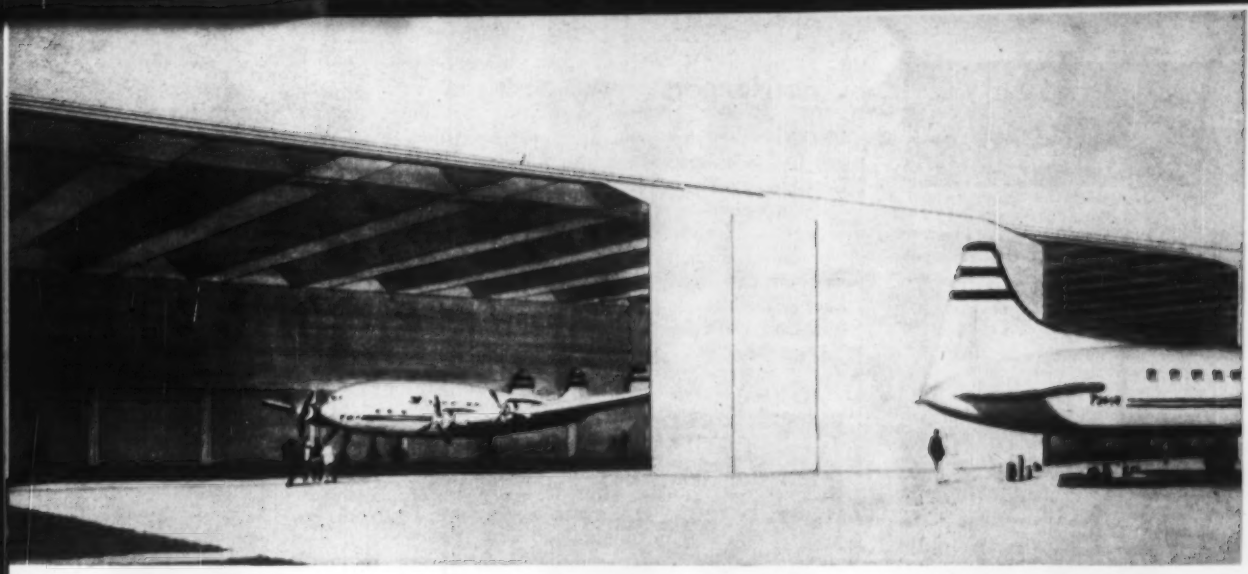




Anchor wall connection was close fit for 6 cables—4 suspending the roof, 2 prestressing the wall. To avoid interference, tendon fittings were placed 10 ft in.


℄ diaphragm at station 132
132' to face of anchorage wall
6" dia. std. pipe for drain
Stud
7'-9"
Oakum filler
Cable socket
3'-6"
℄ plate
3½" plate typical
R 12" x 2½" x 12 welded to pipe
½" dia. spiral 3" pitch
4-2½" cable strands min. breaking strength each strand, 752 kips.
10" dia. pipe sleeve

Typical roof connection—End fitting on cable is threaded on a stud that is inside a pipe sleeve embedded in the concrete. Tightening nut takes up cable.



are connected. Roof deflection will result when temperature variations change the length of the cables, as well as with variations in loads on the roof.

A design was decided upon in which the door is made in two sections connected by a horizontal hinge. The lower section is vertical and is set out beyond the roof edge, while the short, top section inclines back to meet the roof. In this way, a 3-hinge action is introduced, the lower wheels and upper roller assembly acting as the other hinges. In addition to permitting free vertical deflection, this arrangement extends the length of the cantilever structure by 10 ft and eliminates the need for deep, heavy top guides. The inclined section also serves to reduce the amount of wind turbulence and the resultant high uplift pressures at the edge of the roof.

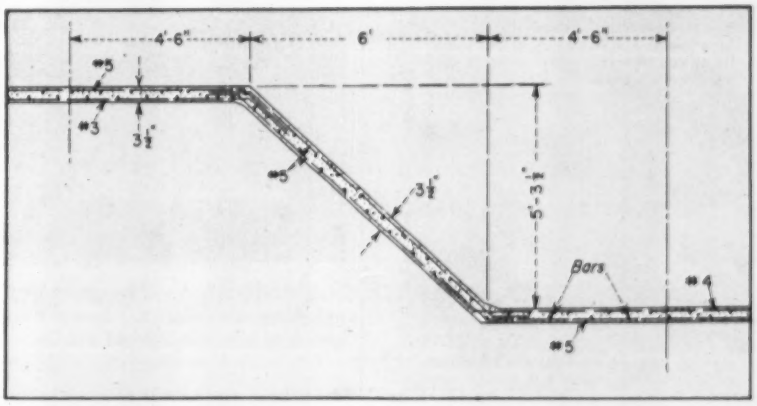
The doors were designed to resist a wind pressure of 20 psf, compared to the 30 psf used for the roof. This design condition was assumed so failures due to tornadoes and other wind loads greater than normally experienced in the Kansas City area would be limited to the doors and other local members of the structure.

The building will be the core of TWA's new overhaul base facilities which are designed to accommodate the complete overhaul of a fleet of between 155 and 175 modern multi-engine aircraft. The exterior of the building will be of partly insulated aluminum panels, finished dull to eliminate sun-reflection danger to approaching aircraft.

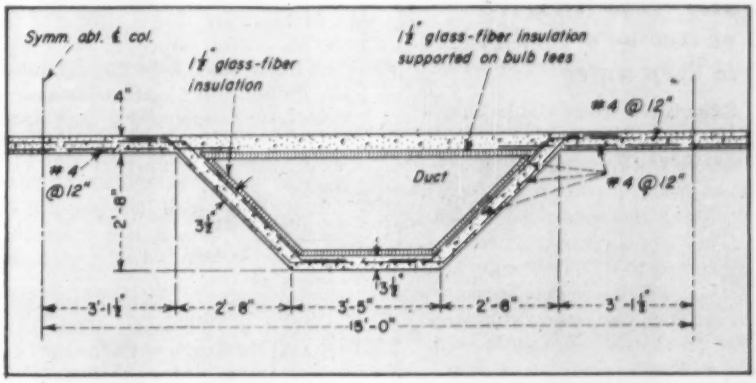
Completion of the overhaul facility is anticipated by Jan. 1, 1957, at which time TWA will begin to pay rent for its overhaul base on a 20 year lease. This lease covers 200 acres of the 4,500 acre tract comprising the new airport. Under the terms of the lease, the city will provide, in addition to the building shells themselves, all sewerage service, power equipment and water lines. TWA will install tools, machines, conveyors, docks, cranes and special equipment necessary to carry on its overhaul functions.

A warehouse and shop building forms the other major segment of TWA's overhaul base. This building, 390 x 435 ft, will eventually be connected to the airframe overhaul building by means of an underground tunnel that will house a pedestrian walkway and conveyor system.

Plans for the creation of the Mid-

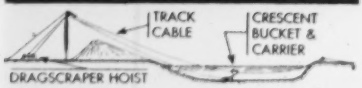


Folded-plate roof, projecting 150 ft, gets its rigidity in the direction of the cables from 5-ft depth of corrugations. In the transverse direction, the thin-shell itself is designed to carry the loads.



Floors of center shop and office section at second and third floor levels are also of folded-plate design. Measuring 30 x 100 ft in each bay, they are suspended at the 50-ft point from the anchor wall overhead. Corrugations form duct space.

HAUL IN MORE PAYLOADS WITH THE SAUERMAN METHOD



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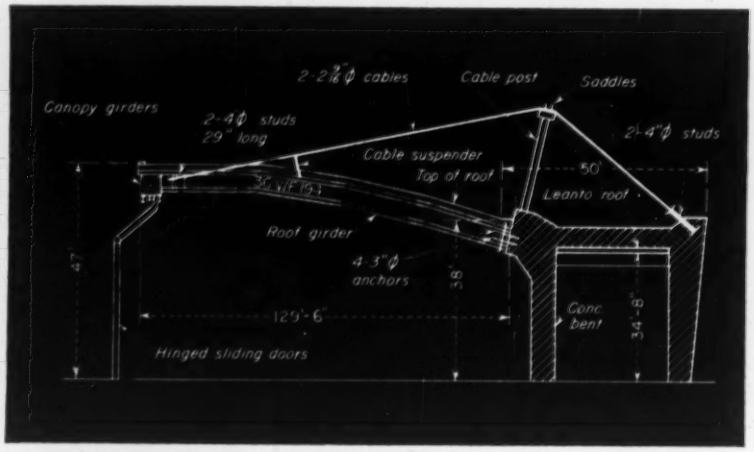
. . . Hangars

Continent International Airport began two years ago. Until now Kansas City has had only one major commercial airport, the Municipal Airport located near the downtown district. The city is initially putting $26 million into the airport, which will at first have one north-south runway 6,000 ft long and 150 ft wide. This later will be extended to 10,000x200 ft. A parallel north-south runway, also 10,000x200 ft, is planned, as is an east-west runway, 9,300x200 ft.

Engineers for the overhaul facility are Burns & McDonnell, Kansas City, with Ammann & Whitney, New York City. The contract is a joint venture awarded to MacDonald Construction Co., St. Louis, and Footer & Creighton Co., Nashville, Tenn.



Suspended roof of hangar to be built in Philadelphia is steel-framed, with 36-in. wide-flange ribs spliced to follow roof curve. The asymmetrical structure relies on a concrete bent for anchorage and stability.

Another suspended roof—

This One Is Steel Framed

Materials are already arriving at the site for another suspended-roof hangar that is scheduled to go up next month at Philadelphia's International Airport. Like Kansas City's, it is being built for TWA—structural-engineered by Ammann & Whitney of New York City.

Here, the similarity ends. This hangar's 130-ft roof is supported on steel ribs (36 WF 194's) hung on steel cables. It is only a one-sided cantilever with the anchorage for the cables provided by a concrete bent leanto running the length of the hangar. The cables are carried over steel saddles on a 28-ft-high post to the tip of the suspended span. The saddle posts are built up of a 13 x 1½-in. flange plate and 24 x 1-in. web plates.

Ten pairs of 2 1/16-in. cables, spaced 30 ft c-c, support the 270-ft-long roof. Each cable is required to have a breaking strength of 392 tons. These cables will be attached to 4-in.-dia high-strength steel studs, 29 ft long at the door end of the hangar and 11 ft long at the anchorage.

A semi-rigid connection joins the steel girder to the concrete bent. To reduce rotation at this connection, and also to provide better shear strength, the designers use high-strength bolts, tightened to provide compression between the end of the girder and the bent.

Precast concrete channel slabs form the roof deck for the hangar. They were selected because the designers found, in this case, the wind uplift condition on the roof was sufficient to overcome dead load. Danger of this occurring placed a 14-psf lower limit on the weight of roof decking chosen.

In addition to the concrete bent on the north side of the building, there is a leanto along its east wall.

The Ballinger Co. of Philadelphia is architect-engineer; Lehigh Structural Steel Co., Allentown, Pa. is the steel fabricator; and Baton Construction Corp., Philadelphia, is the general contractor.

A concrete suspended roof hangar is to be built for TWA at New York International Airport.

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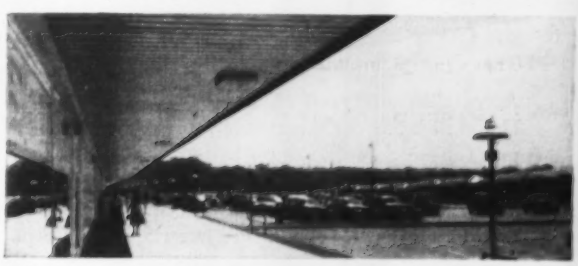

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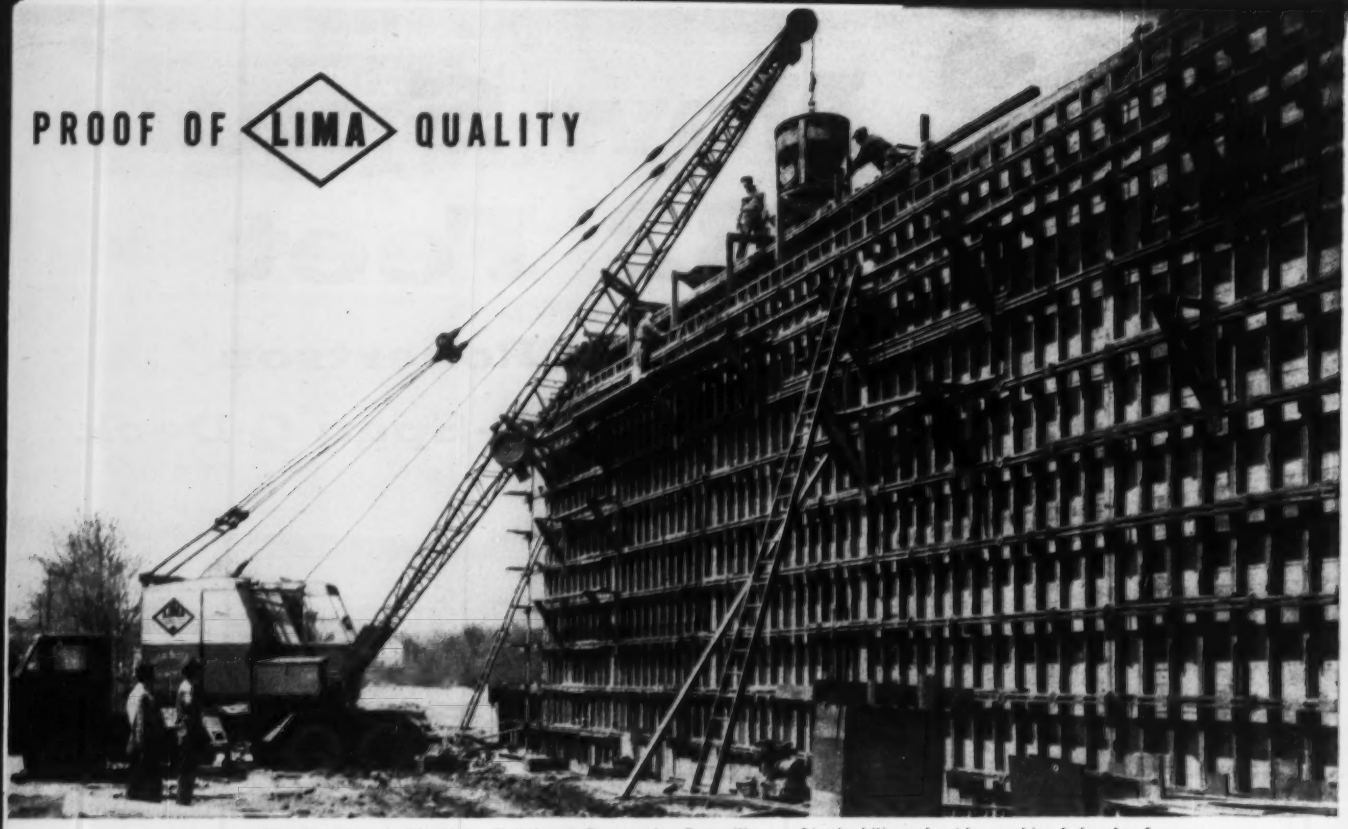

These 29 Limas at The Union Building & Construction Corp. illustrate Lima's ability to furnish a machine designed to fit every job requirement; 7 Type 54-T, 20 ton truck cranes; 1 Type 44-T, 25 ton truck crane; 2 Type 34, ¼ yd. crawler clamshells; 3 Type 44, 1 yd. crawler shovels; 3 Type 703, 1¼ yd. crane-dragline-pullshovel combinations; 1 Type 703SC special crane; 2 Type 802, 2 yd. crawler shovels; 3 Type 803, 2½ yd. shovels; 4 Type 1201, 3½ yd. shovel-crane combinations; 3 Type 1601, 4 yd. shovel-dragline combinations.

The Union Building & Construction Corp. . . .

Relies on fleet of 29 LIMAs for their many diversified jobs

The 29 Limas operated by The Union Building & Construction Corp., Passaic, N. J., are clear evidence of their reliance on Lima quality. Year-after-year, they've added to their fleet of these quality-built machines. Why? Because each of their Limas continues to give them top performance and operating economy on every digging and lifting job . . . without frequent, costly maintenance. That's how Lima quality builds profits for Lima users.

Across the country and around the world, firms like The Union Building & Construction Corp. rely on Limas for profit-making performance. It will pay *you* to contact your nearby Lima distributor for complete details on these quality-built machines . . . or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

COMPARE QUALITY! No other machine gives you as much as LIMA!

1. Moving parts are flame or induction hardened for longer life.
2. Main machinery is placed well back of center of rotation.
3. Anti-friction bearings at all important bearing points.
4. Big capacity drums and sheaves are easy on cables.
5. Propel and swing gears and power take-off are enclosed in a sealed oil bath.
6. Torque converter (optional).
7. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts.

COMPARE and you'll specify LIMA for shovels (to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

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LIMA SHOVELS · CRANES · DRAGLINES · PULLSHOVELS

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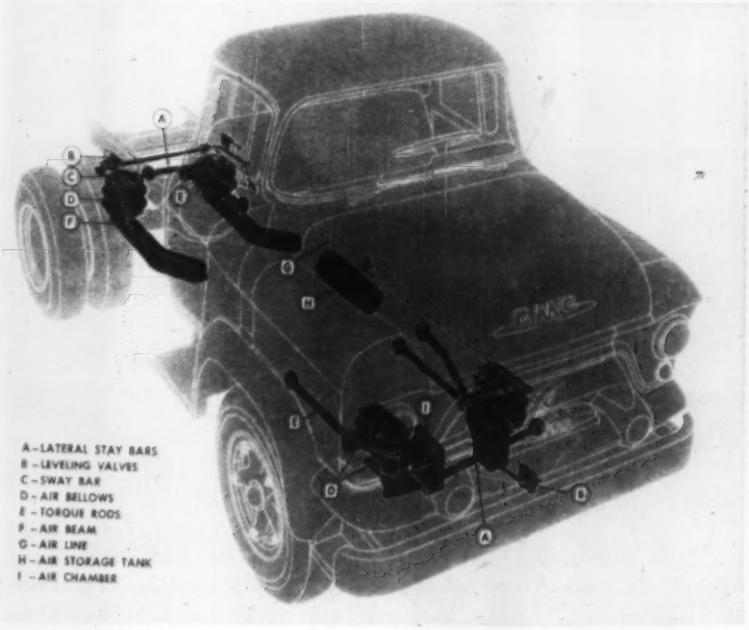
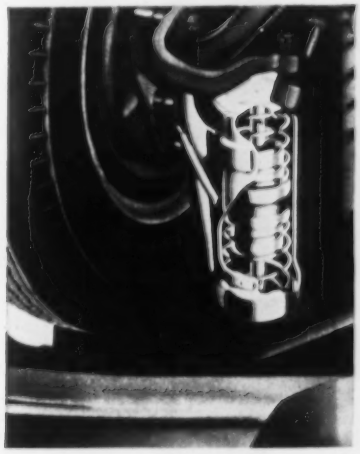
DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD


A – LATERAL STAY BARS
B – LEVELING VALVES
C – SWAY BAR
D – AIR BELLOWS
E – TORQUE RODS
F – AIR BEAM
G – AIR LINE
H – AIR STORAGE TANK
I – AIR CHAMBER



AIR-RIDE SUSPENSION system (left) uses compressed air bellows for springing and automatic levelling. Spring-mounted shock dampers (above) are mounted on front axles of light trucks to improve road-holding characteristics.

New Truck Suspensions Will Smooth Bumps

Truck drivers and their cargoes are in for easier rides. General Motors Truck and Coach Div. now has two systems to reduce bounce per jounce—one each for light and heavy trucks.

• **For the big ones**—Particularly tractor-trailers—GM has adapted the air suspension system now standard on its largest passenger coaches, such as the split-level Scenicruiser bus. The suspension supplants metal springs with air-filled rubberized fabric bellows, so that the truck rides on a cushion of compressed air.

The air ride suspension, which will be ready for truck production late this year, offers more than a smoother ride. By varying pressure of the air in the bellows, optimum spring clearance is maintained at all times. When the truck settles due to increased load, the suspension control mechanism feeds more air to the bellows, jacking the frame up to its proper position. When the load is shifted, the pneumatic suspension automatically levels the truck by countering the offcenter load by differential pressures in the bellows.

Tractors equipped with the suspension device have six air bellows each. Two small bellows support each end of the front axle, and two large bellows support the rear axle. Trailers have four large bellows between the axle and trailer body. Though fed by the tractor's compressed air system, safety valves ensure that no air is drawn from the compressed air supply for the suspension system unless a safe margin is on hand for the air brakes.

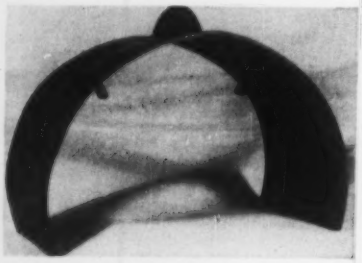
General Motors engineers report their experience with air ride coaches and tests on trucks at the GM proving grounds show that the system has several advantages, including elimination of spring lubrication and maintenance; smoother ride at all load levels; increased payload capacity because of

GENERAL MOTORS official points out levelling valve on experimental truck-tractor.

lower floor height; prolonged chassis life; better load distribution through automatic levelling; and elimination of spring and other vibration noise. Also, the system permits drivers to adjust traction on tandem-axle combinations using a dead pusher or trailer axle by adjusting air spring pressure to throw more load weight on the driving axle.

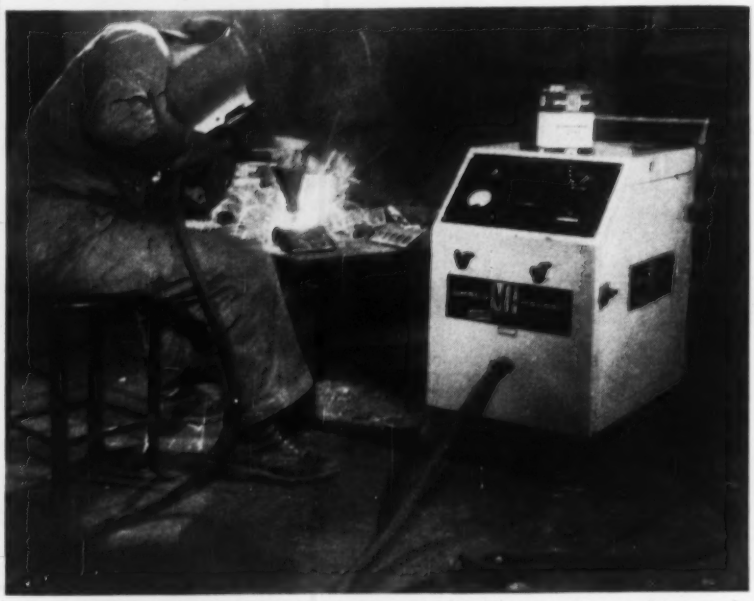
• **For light trucks**—GM's ride-smoother is not as radical as air suspension, but it reportedly does an effective job in increasing steering safety and operator comfort. Shock dampers, consisting of a spring system and a floating weight, are mounted behind the front wheels of the truck to counteract road jolts. The dampers not only smooth out jolts, but tend to keep the wheels in contact with the road surface under washboard road conditions that ordinarily result in chattering.

The road shock damper consists of an 11.8 x 4.4 in. metal cylinder containing a 12 lb weight sandwiched between two coil springs. Tension of the springs is adjusted so that the period of vibration of the damper weight opposes the natural vibration frequency of the front wheel system. When the wheels bounce up, the spring-suspended weight plunges down in the cylinder, muting the bounce and damping out vibrations normally transmitted to the body of the vehicle. As a result of the damper action, light trucks can be mounted on softer springs without loss in control.



Plastic Collar Spaces Open-joint Drain Tile

A polyethylene collar assures ¾-in. spacing in open-joint drain tile. The molded plastic, unaffected by acids and alkalies, provides snap-on action for fast installation and no slipping during backfilling. Lugs on the underside take the guesswork out of spacing while a fin on top makes for convenient handling and alignment. The clips are priced at 6 cents each. Boco Industries, Inc., 19424 W. 8 Mile Rd., Detroit, Mich.



PRE-SET ARC LENGTH controls rate of speed of welding wire from reel in console.

Hardfacing Welder

Portable hand-held unit has semi-automatic feed

Faster operation requiring less operator skill is claimed for a new semi-automatic portable welding unit designed specifically for hard facing and manganese steel arc welding on irregular shaped parts.

Field tested for two years in contractor's maintenance shops on the Massachusetts Turnpike and St. Lawrence Seaway projects, the new welding units were cleared for distribution early this month by Amsco Div. of American Brake Shoe Co.

The Amsco MF welder is actually an accessory unit that is plugged into conventional ac or dc welding power supplies with a current range from 150 to 450 amps.

The unit does three jobs:

• Feeds wire weld metal automatically to the arc, eliminating welding rod replacement.

• Supplies flux automatically from a hopper on the hand held welding gun.

• Automatically compensates rate of weld metal feed to maintain a preselected arc length and current flow.

Weld metal is fed from a coil of wire in the welding console through a flexible hose. The rate of feed is governed by a current sensing device that increases the feed if current is reduced and speeds it up if current drops. Thus, if the operator pulls away from his work, the reel drive shoots the wire out faster to keep the arc consistent. Knowing he will have a controlled arc length during welding, the welder can concentrate on weld metal placement without having to hold the gun such a steady distance from the work.

The flux feed feature—a one quart hopper providing enough flux for about 15 minutes welding time—uti-

RETIPPED with manganese steel caps, bucket teeth were hardfaced with same welding wire.

Put Two More Draftsmen In Space Now Occupied by Four!

Yet Give Each Man More Efficient, Comfortable Working Room . . .

with Hamilton Auto-Shift Tables — from Bruning!

Save Space — Get 30% More Use from Present Area. The same floor space (about 250 square feet) taken up by *four* boards with separate reference desks will easily accommodate six Auto-Shifts. Auto-Shift combines a board and reference desk in one compact unit. The draftsman uses the board of one table while utilizing the large reference surface and drawers of the table behind him. This dual utility saves you space for other advantageous use or lets you put more draftsmen to work in your present space.

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Reduce Draftsman Fatigue — Boost Productivity. Auto-Shift provides fast, easy board adjustment—lets the draftsman change working position often for greater comfort and efficiency. Convenient foot release frees top for height adjustment. Hand release permits quick, easy slope adjustment—slight fingertip pressure sets counterbalanced top at any desired angle. Draftsman can reach any part of the board without strain whether seated or standing.

Mail coupon below for detailed information on the important savings offered you by Auto-Shift.

Only Auto-Shift Offers You These 3 Big Advantages!

1. Only Auto-Shift offers instantaneous, positive adjustment of slope.
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3. Only Auto-Shift lets draftsman work on any part of the board without leaving his seat.

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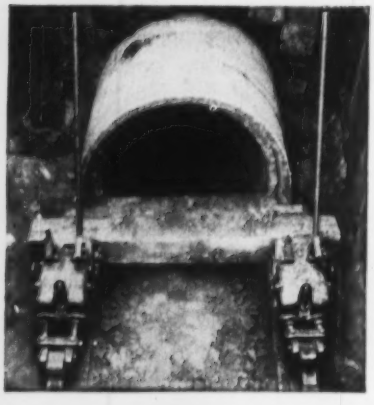
CUT COSTS ON YOUR

PIPING JOBS

PUSH PIPE UNDER STREETS, TRACKS, walks, floors and other obstacles with a GREENLEE Hydraulic Pipe Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement . . . eliminates extensive ditching, tunneling, back-filling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes—model shown above for pushing ¾ to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump also available for extra ease and speed of operation.

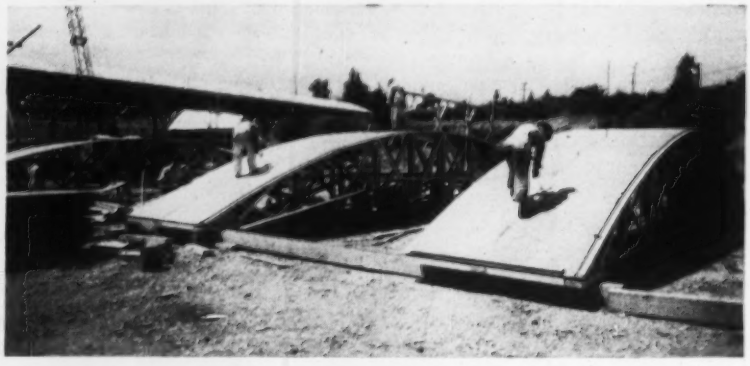


GREENLEE

Write today for descriptive literature Greenlee Tool Co., 2221 Columbia Avenue, Rockford, Illinois U.S.A.

lizes the magnetic field of the current in the welding wire to govern flux flow. The flux clings to the wire as long as current is passing through it. When the welder is not operating, small permanent magnets at the mouth of the hopper cause the flux to bunch up, preventing its escape. Ratio of flux to wire is also controlled by changing the size of the hopper opening and varying the flux particle sizes.

The flux and wire method of welding simplifies changing welding materials since emptying the hopper and switching fluxes is all that is necessary when shifting jobs. The same welding wire is used for most types of hard facing and manganese welding.



Sheathing Nailed To Precut Lumber . . .

. . . Is Top Chord for Economy Truss

An economy roof-truss package that comes to the site precut, ready to be assembled and erected, is making its debut in the Pacific northwest. Available in 32, 40, 50, 60 and 80-ft spans, the new structural unit is both low-cost and lightweight, according to its designers. The efficient design was made possible by letting the 48-in. plywood roof sheathing serve as part of the top chord and carry compressive stress; and by using steel flatbars to carry some of the lower-chord tensile stress.

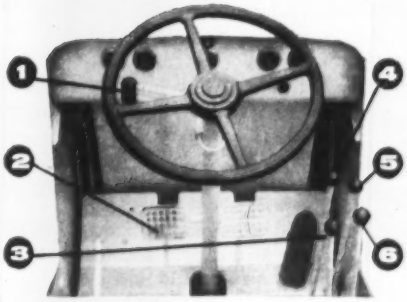
Each of the new sections consists of two bow-string trusses spaced 4 ft c-c, with two continuous 4-ft-wide plywood strips as top chord. The thrust of this sheathing is taken by a steel bearing plate that runs the 8-ft length of the heel of the truss. This plate, in turn, is welded to two steel flatbars that run along the underside of the lower chord—the flatbars taking some of the lower-chord tension.

Produced at Tillamook, Ore., by the Diamond Lumber Co., of Portland, the new trusses are a venture termed Plywood Structures Inc. and tradenamed "PSI." The unit has already been used successfully on several Oregon buildings. One of these, a garage in Oswego containing 91,300 sq ft of warehouse space, was com-

1⅛ yd. Michigan owned by Peter Kiewit Sons' Co., Contractors, working the Indiana toll road.

Faster, more power,

and LOOK, NO CLUTCH!



It's a pleasure to work here!

1. **Power-shift levers:** for Forward-Reverse and High-Low; make any shift while moving in either direction.
2. **That's no clutch!** It's a double-pedal brake, use it with either foot.
3. **Break-out bucket lever:** work the bucket in the pile—you've got two big double-acting bucket cylinders for tremendous breakout power, independent low-level tip back.
4. **Range Shift:** working or travel speed
5. **Drive Selector:** 4-wheel and 2-wheel
6. **Boom Control**

Until you see a MICHIGAN in action, you won't believe that it's possible to deliver so much power with such ease of operation. Your driver stays at peak efficiency all day long because there's no conventional clutch on a MICHIGAN. Instead, the MICHIGAN's exclusive power-shift transmission does all the shifting hydraulically—and eliminates the most notorious cause of excessive maintenance and driver fatigue.

In addition to effortless, instantaneous shifting, you get up to 300% torque multiplication on a MICHIGAN —from the Clark-built converter. With this kind of smooth, shockless power transmission, you get the full advantage of the MICHIGAN's extra weight and higher horsepower.

A demonstration (on your own job, if you wish) is the only way to get a real understanding of what this machine can do! Just write or call us—and don't forget that all MICHIGAN's are available on the low-cost MICHIGAN Lease Plan.

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Complete photo of the muscle man appears on the front cover of the February "NELWELDER", industry's magazine of stud welding.
NELWELD

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Test it yourself . . . apply brute strength to an end-welded NELSON stud, and you'll destroy the stud before the weld gives way . . . it stands up under shock, impact, vibration and tension.

Further proof of strength is the increasing number of engineers and architects who are putting NELSON studs up to 1⅛-inch diameter to work in heavyweight jobs. How they are used to fasten better at less cost is revealed monthly in the "NELWELDER", the magazine of stud welding. To start your *free subscription*, mail us the top of this advertisement.

NELSON STUD WELDING
Division of Gregory Industries, Inc.
LORAIN, OHIO

pleted at $2 per sq ft, including slab and roofing.

The sections are usually sold as a packaged building. Plywood Structures Inc. is establishing dealers and agents throughout the country.

Believe it or not, he's . . .

Drilling Concrete

Seems there's nothing to do any more but watch the wheels go 'round. At least that's what the manufacturer says of the new core saw shown above at work drilling a 4-in. hole in marble-faced, reinforced concrete.

The Kor-It saw is an electric powered core-cutter that will drill round holes, from 1 in. to 10 in. in diameter, through just about anything. Diamond-faced core drills, and a feed mechanism that keeps constant pressure on the bit give the unit a cutting speed averaging 1 in. per min. The corer weighs in at 150 lbs complete, and is mounted on small wheels for easy positioning over the hole location. To get into operation, all that's needed is an outlet for 110 or 220 v, and a tap to supply water to a hose.

The drill is relatively quiet, so it may be used without disturbing business operations in buildings. Standard depth of cut is 10 in., but extension bars are available for going through thicker sections. With cradle attachments, it will drill horizontally, or at any downward angle to vertical. J. F. Hamlin Co., 750 Ellis St., San Francisco 9, Calif.

ROLL CRUSHER PRODUCTION TIME DOUBLED...

using Stoody Semi-Automatic Wires

Roll wear encountered in crushing extremely hard blue granite rock to critical specifications was limiting production at Arizona Sand and Rock Company's portable plant, near Phoenix. Every hour of running time had to be matched with an hour down for maintenance of the rolls! Days just weren't long enough to produce tonnages required and still keep equipment in shape... at least not by ordinary methods.

To avert an impending aggregate bottle-neck, management turned to the new Stoody semi-automatic hard-facing process, set up as a routine repair technique. Time required for maintenance was immediately cut in half... and the hours gained each day were converted to a much needed second production shift!

Low spots on the pair of 40" x 22" rolls are nightly built up as necessary with Stoody $\frac{7}{64}$" diameter Manganese. Corrugations are capped with Stoody 100. Both of these alloy materials are supplied in tubular wires for semi-automatic application. High deposition rates—7 to 15 pounds per hour—are several times faster than manual welding. Considerably less heat input is required than by other methods. Deposits are sound and free from porosity. No flux or flux dams block the weldor's view and stub end losses are eliminated.

By permanently installing the semi-automatic welder as part of the crushing equipment no time was lost preparing for nightly maintenance.

If you have maintenance problems on any of your heavy equipment, we'd suggest that you ask your Stoody dealer (check the "yellow pages") for new literature on STOODY ALLOY TUBULAR WIRES, or write direct.

STOODY COMPANY

11976 East Slauson Avenue
Whittier, California

See the Stoody Exhibit — Welding Show, Buffalo, N. Y. May 9-11

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STRUCTURAL INTEGRATION METHOD.....

NOT an outer layer
NOT a surface coating

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Permeates the wall, oxidizes, expands

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When you insist on IRONITE Waterproofing you get STRUCTURAL INTEGRATION in the wall. Once applied, removal is impossible without destruction of the underlying concrete or masonry.

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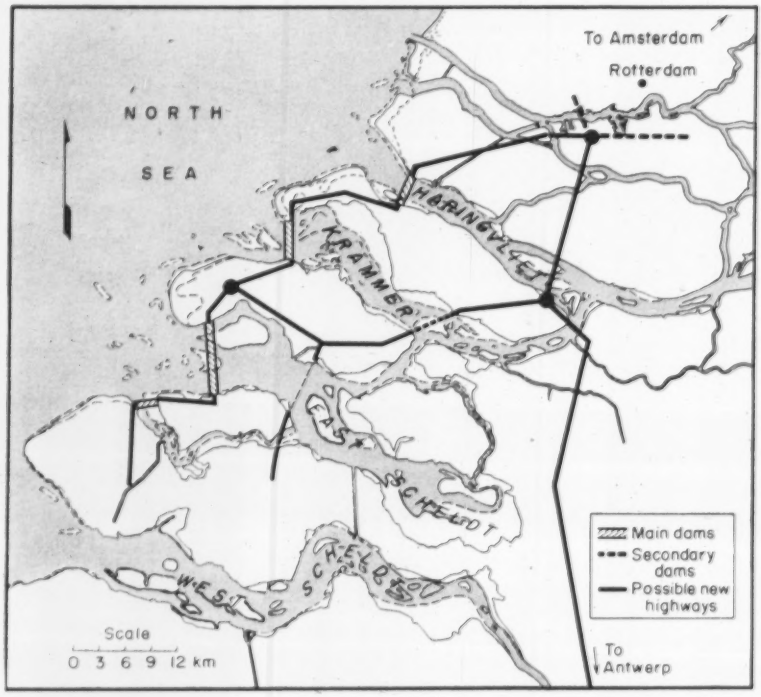

Holland Maps Big Flood Control Plan

The most ambitious plan ever proposed by the Dutch in their struggles against the sea has been embodied in a bill submitted to the parliament. Mainly the plan calls for the closing off of the principal estuaries in the provinces of Zeeland and South Holland. Called the Delta Plan, it is expected to take 25 years to complete and will cost around $630 million.

The plan is designed to provide protection against a recurrence of the damage from floods such as those which occurred in February, 1953 (ENR Feb. 12, 1953, p. 47). It will also create more tillable area and eliminate the isolation of the southwestern islands through the construction of a highway from Rotterdam via the dams to the western islands.

A still more ambitious plan—the connection of the Frisian Islands in the north with the mainland through a system of dikes and dams—has been postponed until completion of the Delta Plan.

The scheme consists of closing off the Haringvliet, Krammer, East Scheldt and a smaller estuary further west and the building of highways atop the dams. The most difficult job is expected to be the 5.6-mi closure of the East Scheldt. The construction of this dam alone will cost nearly $100 million.

Two open sea entrances will be maintained—the New Waterway canal connecting Rotterdam with the sea and the West Scheldt which is Antwerp's access to the sea. But, it is thought that the Delta Plan will be effective enough to prevent these entrances from becoming serious dangers.

Besides offering flood protection, the Delta Plan will bring into cultivation nearly $300 million worth of new acreage. Further, the new highways which will be constructed via the dams will shorten the distance between Rotterdam and the western islands by nearly 40 mi. Another highway from Rotterdam to Antwerp—with none of the dams involved—has been included in the Delta Plan.

The bill now before the parliament does not provide any details nor even the exact location of the dams. However, work is expected to start this year.

Though the bill makes no reference to contract letting, it is doubtful that other than Dutch contractors and materials and equipment will be used on the project.

Fast-Setting Cement

Soviets note two methods of utilizing cement dust

A Soviet report calls attention to the possibilities of improving the speed of setting cement by using extremely fine cements—specific surface between 5,000 and 6,000 sq cm per gram. A comparison with American high-early-strength cements shows that this is indeed a high fineness, since these American cements average in the region of 3,800 sq cm per gram.

According to the article in STROITELNAJA GASETA (Construction Journal) by S. Gretshushnikov, director of the No. 1 Moscow Factory for Construction of Prefabricated Concrete Parts, two methods are used by the Soviets for producing this cement.

One method involves the collection of cement dust at filters in the cement factories. The report claims they are able to collect up to two tons per hour on each filter. The cement particles desired are less than 3 microns (1 micron = 1×10^{-6} meters).

The other method for the manufacture of the fine-grained cement is a milling process where the ground cement is passed through a second mill.

According to the report, these are the compressive strengths observed:

Time	Ordinary Cement (psi)	Fast-Setting Cement (psi)
24 hours	2,850	4,500
2 days	3,985	4,830
3 days	4,555	6,120
7 days	5,690	7,120

The Soviet observations are not without precedent. Thomas A. Edison experimented with very fine cements and found that there was a drawback: the fine cement particles were hydrated by moisture in the air, before the cement could be used.

Action Taken to Protect Winnipeg From Flood Damage

A conference between the Manitoba government and Winnipeg officials approved cost-benefit studies of the major flood prevention plans outlined in the Red River Basin investigation report of 1953. Three separate control projects, ranging in cost from $5 million to $76 million will be studied.

The Red River Basin investigation was made by federal government engineers after disastrous floods in 1950.

DRAFTING TRENDS

At the Caterpillar Tractor Co., Joseph Bryant (right) of the Tool Design Department inspects PTM with Marvin Merritt, Frederick Post dealer in Peoria, Illinois.

Improved tracing medium has film-like transparency

Some products remain "news" for several years; usually because their qualities are revolutionary. PTM (Post Tracing Medium) is an excellent example. The transparency, stability and uniform drawing surface far exceed accustomed standards.

The secret of the transparency lies in a patented "welding" process. Special 100% rag paper stock is first impregnated with transparentizing materials. The sheet is then processed under tremendous pressure, literally fusing the materials together into a continuous mass. This produces a sheet no longer resembling paper, but rather a plastic film filled with clear fibers for added strength—a remarkable tracing medium with almost glass-like transparency.

The stability and smooth surface result from the pressure applied during the process. With air pockets eliminated, there are fewer pores in the paper subject to atmospheric changes. PTM offers dimensional stability ordinarily not found in paper based products. The same pressure eliminates all surface variations and traces of grain. PTM provides a smooth, even sheet with uniform drafting performance in every direction ■

New triangle-protractor saves time

A new item called *Ajust-O-Bevel* combines a protractor and a triangle in a single time-saving unit. Biggest innovation is the separate set of graduations for angle or bevel, a scale entirely new in its application to a triangle.

Graduated in 16ths of an inch from 0 to 8", and in 8ths of an inch from 8" to 12", the scale gives a complete variation of sloped lines drawn in inches of drop per foot. It eliminates extra layout and calculating operations with a simple setting.

The hairline (index line) and protractor graduations are on separate, adjacent surfaces to avoid parallax. The *Ajust-O-Bevel* is made of transparent, optical grade plexiglass.

Further information on these items is available from the Reader Service Division of the Frederick Post Company, 3651 N. Avondale Avenue, Chicago 18.

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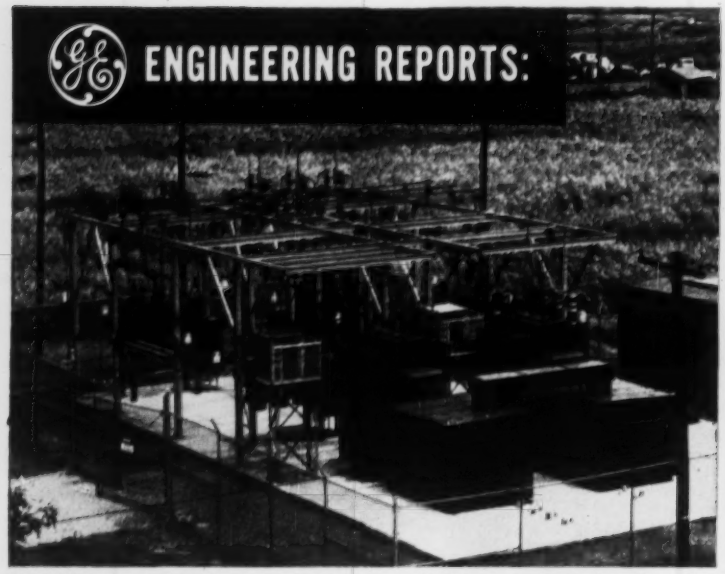
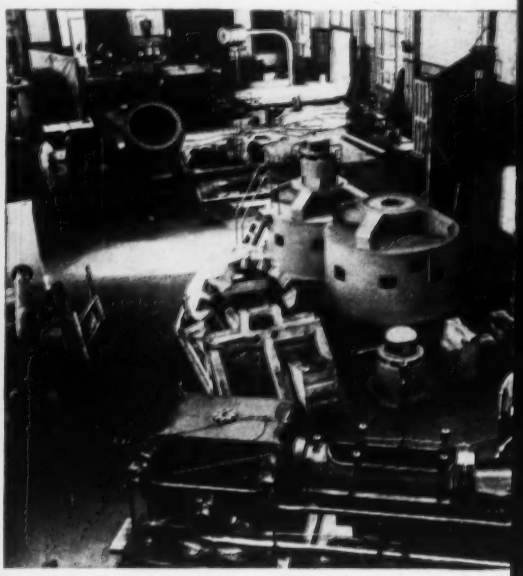
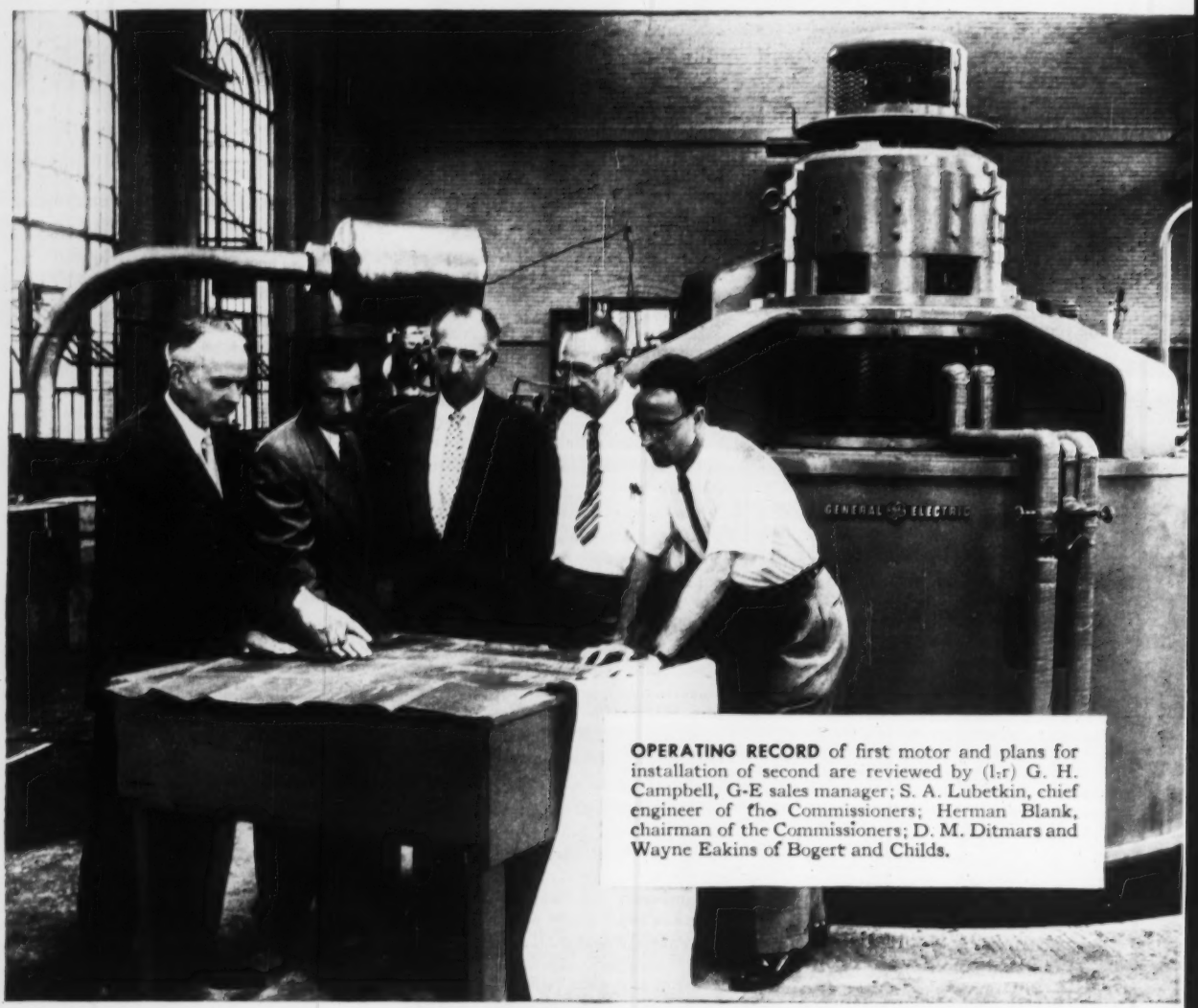


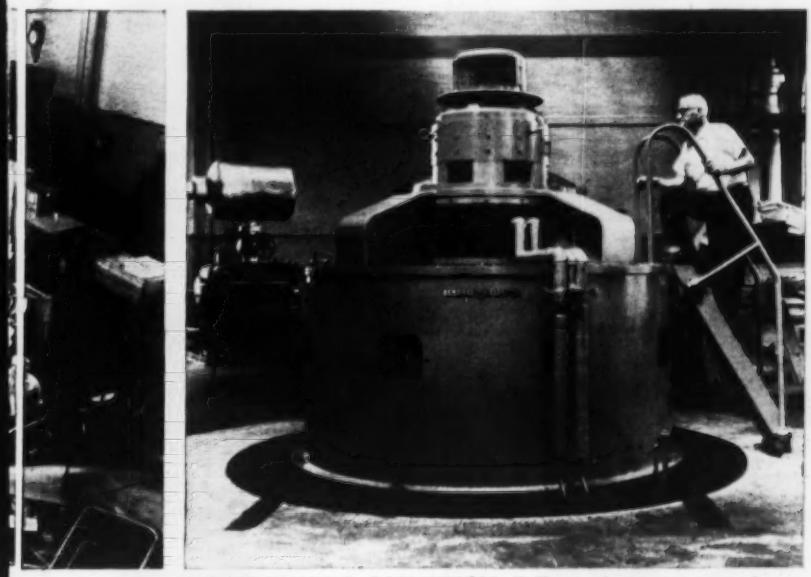
MODERN G-E unit substation helps assure vital power continuity. Including 34.5-kv line circuit breakers, RM transformers, metal-clad switchgear; 6000-kva substation provides 4.16-kv power and controls, protects feeder circuits.



SECOND G-E motor is shown ready to be installed at plant while first helps maintain uninterrupted disposal service during conversion.



OPERATING RECORD of first motor and plans for installation of second are reviewed by (l.r) G. H. Campbell, G-E sales manager; S. A. Lubetkin, chief engineer of the Commissioners; Herman Blank, chairman of the Commissioners; D. M. Ditmars and Wayne Eakins of Bogert and Childs.



HIGHLY RELIABLE, ECONOMICAL G-E synchronous motor incorporates most-modern large-motor insulation system. Unique super-smooth G-E spring-type thrust bearing supports suspended parts as they rotate on thin film of oil. Unit above is rated 1250-hp, 4160-v.

FLICK OF SWITCH on compact, efficient G-E field synchronizing panel starts motor. Boilers often needed eight hours to get up steam. G-E design groups necessary control into single unit.

Modernized Newark Bay Pumping Station improves service to 28 N. J. municipalities

G-E electrical system helps Passaic Valley Sewerage Commissioners cut operating and maintenance costs, improve plant reliability

Looking ahead to provide adequate disposal service for the more than 1 million people they serve, the Passaic Valley Sewerage Commissioners have launched a $9 million modernization program at the Newark Bay Pumping Station.

OPERATING SINCE 1924 the station has been hard pressed to handle modern loads of the 28 contributing municipalities. Breakdowns and costly repairs were frequent. With conversion from steam to electricity as a modern power source, dependable, rated pumping capacity ultimately will be increased to 500 mgd. Engineers estimate annual operating and maintenance savings of $140,000.

First of new units, consisting of G-E motor and Worthington pump, rated 100 mgd at 50-foot TDH, is now serving station's base load.

UNINTERRUPTED SERVICE during conversion was imperative. G-E engineers worked with Commission engineers and Bogert and Childs, Consulting Engineers, to help plan a most efficient electrical system. G.E. continues to work with the Commissioners' engineers and electrical contractors, W. R. Scott & Son, Inc. and Lightning Electric Service Co., to co-ordinate shipment and installation of electric equipment to facilitate orderly changeover.

G-E EQUIPMENT AND ENGINEERING SERVICE can pay off for you, too. Contact your local G-E Apparatus Sales Representative early in the planning stages of your next disposal project. General Electric Company, Schenectady 5, N. Y. 666-41

Gain public support for your disposal program. Put the newly revised G-E film, CLEAN WATERS, to work in your community. Ask your G-E representative about this complete More Power to America Program.

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Gulfgate Shopping City near Houston, established by Allied Stores Corp., is like most things in Texas . . . big. The $20,000,000 project will house 90 to 100 stores, including Joske's department store with 207,000 square feet of space. Overall, there are 840,000 square feet, facilities to park 20,000 automobiles a day. Fabricated steel for this gigantic, modern development was furnished by Ingalls.

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Effective Teaching

University receives grant to train science teachers

The University of Wisconsin has received a grant of $249,700 from the National Science Foundation to inaugurate an experimental program to train high school teachers to teach science and mathematics more effectively.

The program, which will begin next fall, is part of a national effort to recruit more science and mathematics teachers as well as to increase the effectiveness of teachers now in service.

Initially, the program will be limited to 50 teachers selected chiefly from mid-western states. If successful, it will become a continuing program in which teachers from all parts of the country may participate.

Relating the program to national manpower requirements, Harvey Sorum, who will direct the program, had this to say:

"Well trained scientists, in far greater number than our colleges and universities are now turning out, are needed if the growing scientific manpower requirements of technology and research are to be met. The future scientists must be recruited from the ranks of high school students. If they are to be recruited they must first be introduced to science, must be inspired to seek a career in science, and must be taught the rudiments of science.

"This inspiration, teaching and recruitment must come, largely, from our high school teachers, and if they are to do the kind of job that needs to be done there must be more of them and they must be capable and well trained."

Sidney H. Bingham Joins Monorail Firm in Houston

Sidney H. Bingham, recently retired general manager and executive director of the New York Transit Authority (ENR, Sept. 15, 1955 p. 47) has joined the firm of Monorail Inc. in Houston, Texas as consulting engineer.

Bingham, recognized as one of the leading authorities on city transportation problems, has turned thumbs down on all previous monorail projects and said he accepted the Houston appointment only after careful consideration.

"I have made a cautious analysis of the plans and specifications of the Houston monorail project," he said, "and I want to congratulate the Houston developers on the new thinking they have brought into monorail planning."

Bingham said that prior to the Houston design, soon to be in test pilot stage, there have been "no technological improvements in the past 50 years in such proposed developments."

Louis C. McCabe Leaves Public Health Service

Louis C. McCabe, staff advisor on air pollution, has resigned from the Public Health Service, Department of Health, Education and Welfare to become president of the newly organized firm of Resources Research, Inc., with headquarters in Washington, D. C.

A former director of the Los Angeles County Air Pollution Control District, McCabe was chief of the Fuels and Explosives Division of the Bureau of Mines, Department of Interior, when he was called back to active duty last May by the Public Health Service.

Since then he has been working under chief engineer M. D. Hollis. He served as secretary of the Interdepartmental Committee on Community Air Pollution, and helped to establish the expanded PHS program in air pollution research and development authorized by the Air Pollution Control Act passed by Congress last July.

Is Professional Licensing An Educational Function?

Pennsylvania engineers have protested a proposal that would centralize all state licensing for trades and professions in Pennsylvania's Department of State. Licensing is currently handled by the Department of Public Instruction.

The proposal is part of a government reorganization program undertaken by Governor George H. Leader's administration.

Those who voiced opposition to the transfer contended that the present procedure of examinations and certifications is an appropriate function of state educational activities. State authorities have viewed it as an unrelated activity.

Spokesman for the engineers was William H. Lesser, consulting engineer of Scranton, Pa.

(Continued on page 64)

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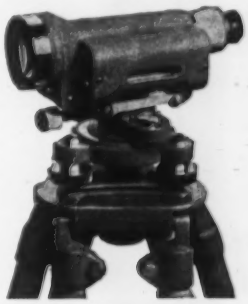

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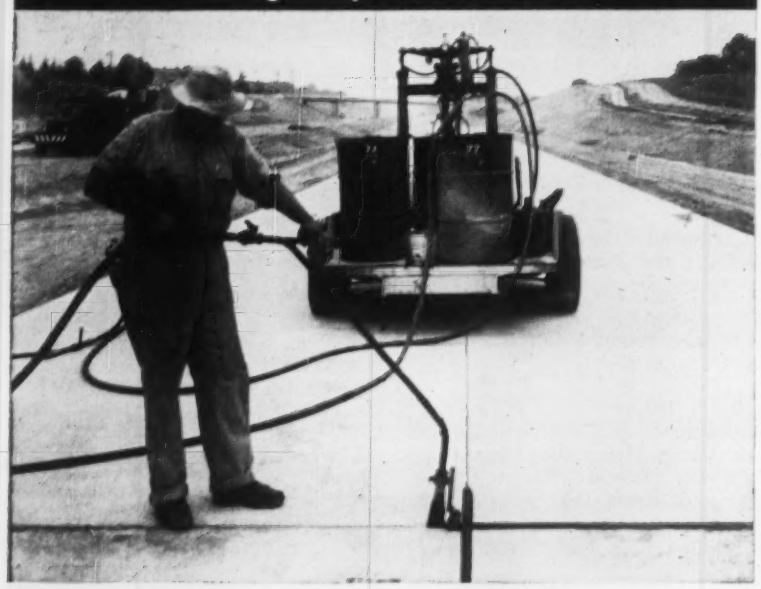

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. . . Men and Jobs

N. F. Ronan Gets New Post In N. Y. Public Works Dept.

John W. Johnson, superintendent of the New York State Department of Public Works, has announced appointment of Newton F. Ronan as public works superintendent of operation and maintenance.

In his new assignment, which became effective Jan. 1, Ronan has charge of operation of the state canal system, maintenance of highways and general supervision of many state-owned buildings.

He has been employed continuously by the Department of Public Works since 1911, recently serving in the Albany district as assistant engineer.

William F. Neale Is Named Partner in Maryland Firm

William F. Neale has become a partner in the Baltimore, Md. engineering firm of Whitman, Requardt and Associates. He has been with the firm for 12 years with the exception of 3 years, when he was chief engineer of the Metropolitan District of Baltimore County.

A civil engineering graduate of the University of Maryland, Neale started his career with the Pennsylvania Railroad in the Baltimore and Philadelphia Divisions, and later spent three years on housing developments in and around Baltimore.

Liaison for Urban Renewal

Harold F. Alderfer, former head of the Department of Political Science at Pennsylvania State University, has been appointed to the newly created post of Assistant Commissioner for Operations for the Urban Renewal Administration.

Alderfer will serve as principal liaison with URA's regional offices to expedite federally assisted slum clearance and urban renewal projects.

Carrier Corporation Names New Construction Manager

Howard N. Eggleston, manager of construction for the Atlanta district office of Carrier Corporation, has been appointed national construction manager for the Syracuse, N. Y., air conditioning firm.

A civil engineering graduate of Northeastern University, he will coordinate all field construction and shop fabricating operations.

Eggleston joined Carrier in 1946.

(*Continued on page 66*)

JEWEL TEA COMPANY WAREHOUSE:
Melrose Park, Illinois.
Architect: A. Epstein & Sons, Inc., Chicago.
General Contractor: A. L. Jackson Company, Chicago.
Roof Deck Contractor: Anning-Johnson Company, Chicago.

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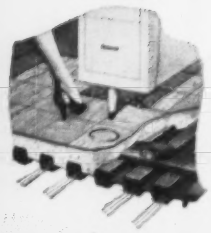

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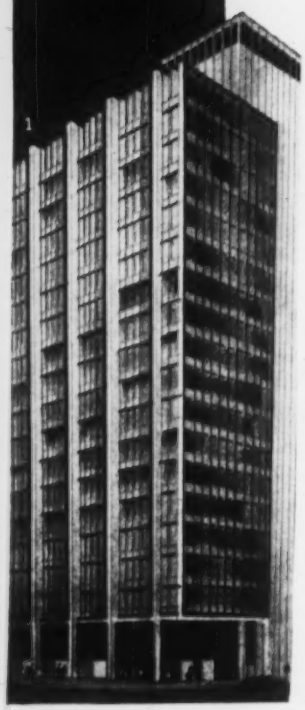

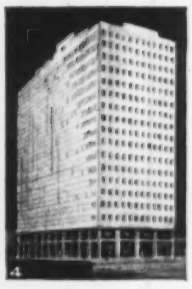

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Commercial Credit Building, Baltimore, Md. Architects: Harrison & Abramovitz, N.Y.C. Engineers: Edwards & Hjorth, N.Y.C. General Contractor: Consolidated Engineering Co., Baltimore, Md.

3. In the Banking field
Federal Reserve Bank Building, Minneapolis, Minn. Architects: Larson & McLaren, Minneapolis, Minn. Consulting Engineers: Schuett Meier Co., Minneapolis, Minn. General Contractor: Rought Tech. Inc., Minneapolis, Minn.

4. In the Transportation field
Pennsylvania Transportation Center, Philadelphia, Pa. Architect: Vincent G. Kling, Philadelphia, Pa. Engineers: McCormack & Taylor Associates, Philadelphia, Pa. General Contractor: McCloskey & Co., Philadelphia, Pa.

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. . . Men and Jobs

Men and Jobs Briefs . . .

• **Associations**—The Oregon section of ASCE names **Robert M. Bonney** of Moffatt, Nichol and Taylor, Portland, Ore., as president . . . **Robert D. Dewell**, civil and structural engineer, becomes head of the San Francisco, Calif., section of ASCE . . . The Structural Engineers' Association of Northern California elects **Walter L. Dickey**, structural engineer for Bechtel Corp., as president.

• **Corps of Engineers**—**Lt. Col. John S. Hassell**, recently stationed at Homestead Air Force Base in Florida as resident engineer, is assigned to Thule Air Force Base, northern Greenland, as area engineer.

• **Careers**—**Charles W. Cooke**, public works director of Hartford, Conn., is named director of the $10-million Park River flood control program in the Greater Hartford area and will be given a leave of absence from his city post starting in April . . . The Sacramento (Calif.) Redevelopment Agency, about to undertake a 15-block slum clearance project, reelects **Fred Grumm**, retired California state division of highways engineer, as president.

• **Business**—Baltimore Contractors, Inc., builders and engineers in Baltimore, Md., names **Albert C. Klingenberg** and **Paul E. Tignor** as vice presidents . . . **L. F. A. Mitchell** becomes a vice president of Burns and Roe, Inc., New York consulting engineers and constructors . . . **Daniel J. Keating**, contracting firm in Philadelphia, Pa., appoints **Justin J. Keating** as industrial division manager.

When **Eugene J. Tiefenthaler** became president of Worden-Allen Company, Milwaukee, Wisc. (ENR Jan. 5, p. 69), he succeeded **E. W. Krueger**, now board chairman—**Phillip D. Krueger** was named secretary . . . United Engineers and Constructors, Philadelphia, Pa., appoints **Carl A. Schlegal** as vice president in charge of its gas division, succeeding **Charles W. Hunter**, who is retiring.

• **Education**—**Gene M. Nordby**, formerly on the civil engineering staff of the University of Colorado, is appointed associate professor of structural engineering at Purdue University . . . **John M. Kyle**, chief engineer of the Port of New York Authority, is elected alumni representative of the board of trustees of Stevens Institute of Technology.

The feet* here are piers used to support Harry Street Bridge, Wichita Kansas. Inland Construction Co., Contr.

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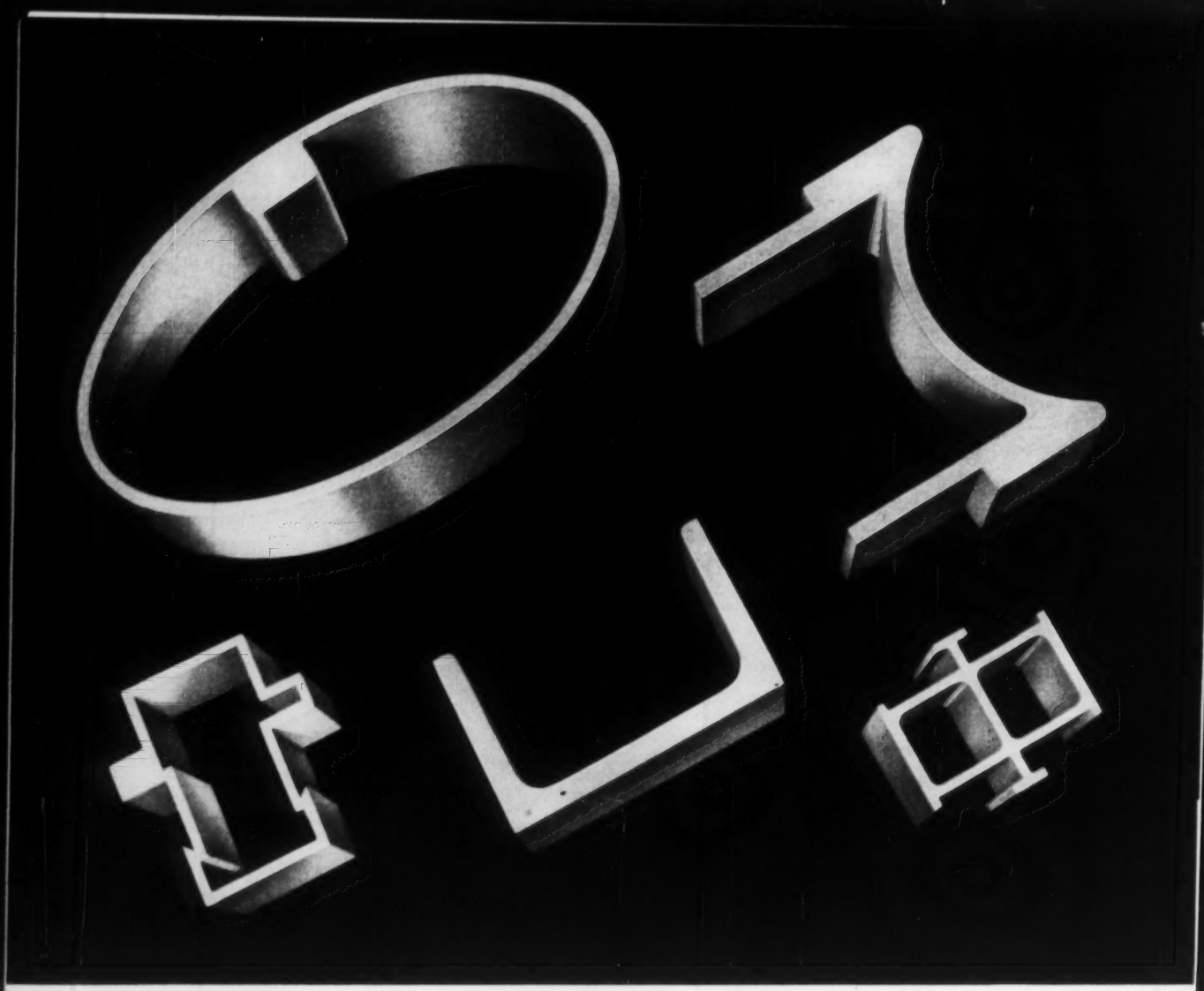

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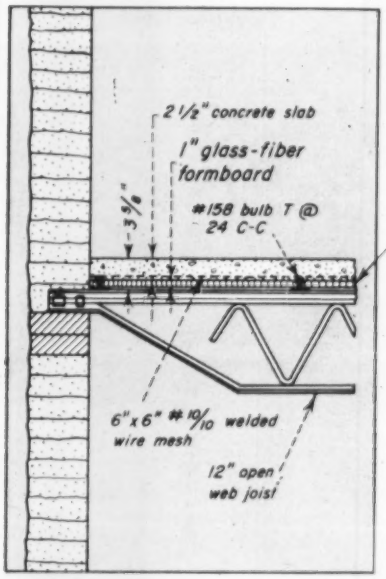


THIS...

cut costs for a factory-office building. It was the...

- Form for the 2½-in. concrete slab
- Thermal insulation for the floor
- Acoustic insulation for the ceiling

Glass-Fiber Board Does Three Jobs

Faced with the problem of providing an insulating-concrete second-floor slab for an office and manufacturing building, Vappi and Symmes, Engineers of Cambridge, Mass., did a little research and came up with a solution that saved their client some money.

The gist of their solution is a glass-fiber board (1-in.-thick) that serves as both formboard and insulation for the second floor of the building—and sound-proofing for the first. Since this type of board is used normally as a form for cast-in-place gypsum roof deck, it was not designed to support the considerably heavier stone concrete. To answer the question of whether it would, Vappi and Symmes ran some tests preliminary to construction.

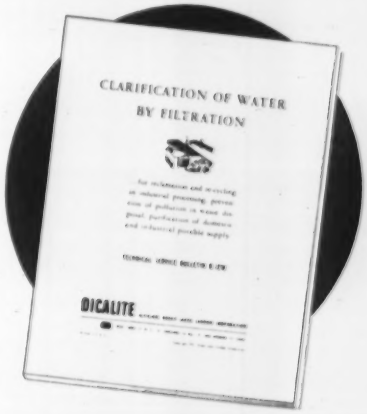
For the tests, the proposed second-floor structural system was duplicated. This system was to consist of 12-in.-deep open-web steel joists spaced 24-in. c-c, with bulb tees resting on the joists at 24-in. intervals in the perpendicular direction. Formboard and wire mesh were to be placed on top of the bulb tees and then a 2½-in.-thick, 3000 psi structural slab was to be cast on top of this.

The test panel was set up at an adjacent site, one at which glass-fiber formboard and bulb tees were being used in the roof system. Under ordinary job conditions, the test proved to be successful. It was found that although the glass-fiber board deflected about ¼ in., no loss of water from the concrete occurred. This small deflection of the glass-fiber board meant that the concrete slab would remain supported on four sides and would act like a two-way slab. Reinforcing consisted of ordinary 6x6-in. by no. 10 wire mesh. A lighter mesh such as 4x4-in. by no. 12 would have been adequate but because of its limited availability, would have been more expensive.

Actually, two test panels were set up. They differed in that one of the panels had a layer of 15-lb felt on top of the glass-fiber board, since it was not known whether or not the glass-fiber would retain the water in the concrete. As it turned out, there was no appreciable water retainage in the felt panel over the other.

Because of these satisfactory results, the system was used in constructing the two-story office and manufacturing building. This had a total floor area of 24,000 sq ft. The second floor of the building was to be used for office purposes while the first floor was to be primarily manufacturing. Insulation was important because this second floor was to be entirely air conditioned.

It was found that this system provided a saving of 12 c per sq ft in the air conditioning equipment needed for the building, while the insulating value of the glass-fiber provided an



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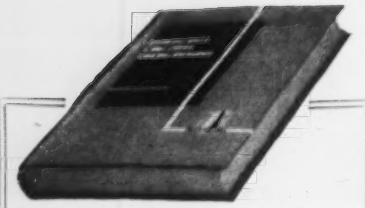

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additional operating saving of about $60 per year. Further benefits were the fact that the exposed glass-fiber on the ceiling of the manufacturing area below provided a material with excellent sound absorption as well as being pleasing in appearance.

On this project the engineers, Vappi and Symmes with William L. Maini as project engineer, collaborated with the contractor, Vappi & Co., in developing and building the slab structure for owners, Barry Controls, Inc.

Reverse Wheel Motion Rings Back-up Alarm

A simplified back-up alarm which works automatically with wheel motion and requires no electrical or mechanical hook-up has been developed by two mechanics of the Miller Construction Co at Anchorage, Alaska.

Tested on the construction company's equipment with satisfactory results, the new alarm mechanism consists of a 6-in. metal bell mounted on a steel plate which is installed on the axle hub of wheeled vehicles or is adaptable for tracked equipment. The alarm is sounded by four heavy metal hammers striking the bell during reverse motion of the vehicle. Bumper springs, preventing the hammers from riding on the bell and hammerstops, silence the alarm in forward motion.

The new alarm is named the B & R Automatic Bell by its inventors, Max von Radics and William Bookwalter, who have patents pending. It is being tested by the Corps of Engineers, who describe first results as "promising."

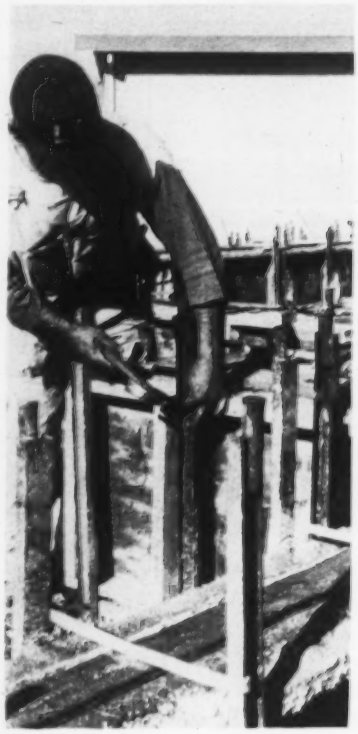
Back-up alarms have been required on defense construction projects under jurisdiction of the Corps of Engineers, North Pacific Division, since 1951, to reduce accidents caused by heavy equipment backing through construction areas. Most such alarms require electrical hook-ups.

How to Waterproof Hardwoods For Slab-on-Grade Buildings

In view of the modern trend to slab-on-grade construction, the Maple Flooring Manufacturers Association suggests two methods of waterproofing so that floors of the northern hardwoods—maple, beech and birch—can be laid successfully on or below grade.

• **Method No. 1**—Install a waterproof and vaporproof membrane directly over hard-tamped grade or fill material to insure isolation from moisture and vapor originating in the soil.

(*Continued on page 72*)



Form Stakes Breaking? Here's How to Stop It

Anyone who has ever struggled to drive wood foundation stakes into hard soil will appreciate the brain-child of Jack Eandi of the Eandi Metal Works, Oakland, California.

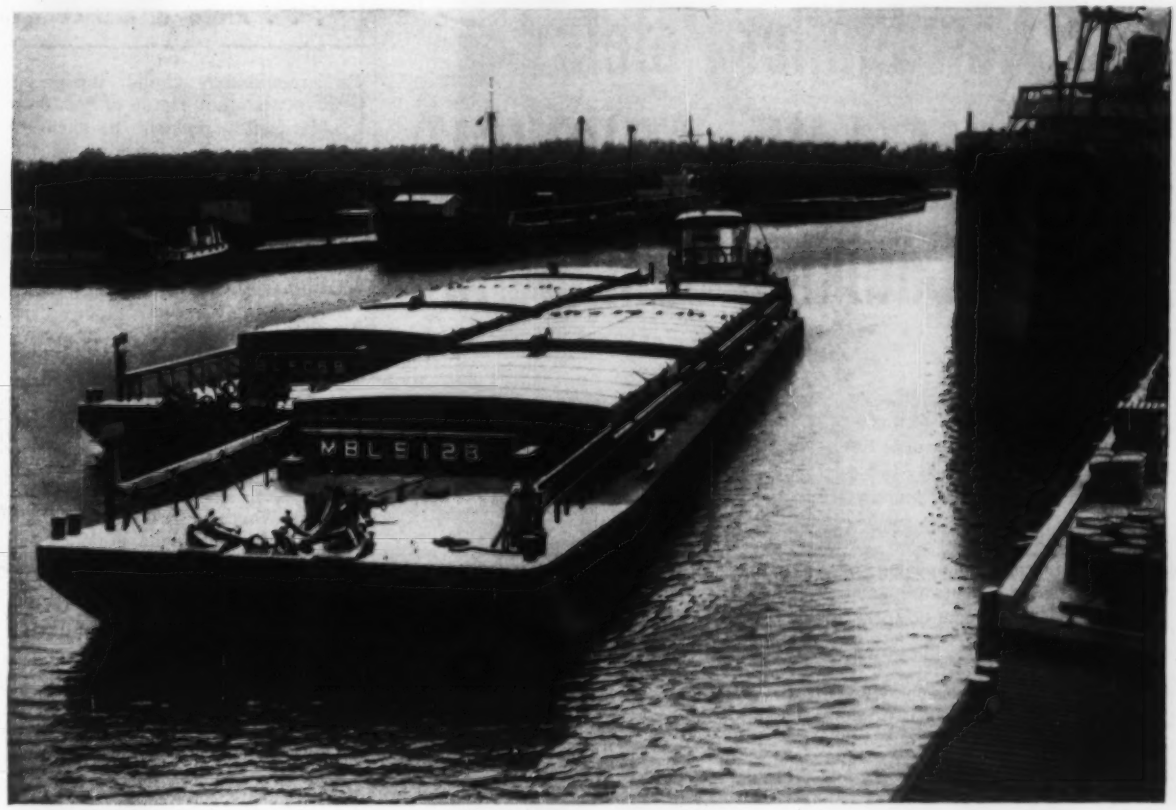
He has devised a pointed steel foundation stake that solves the problem of broken wood ones.

The steel stake is made from a 2x1x$\frac{1}{4}$-in. steel channel 45 in. long, to one end of which a 1$\frac{1}{4}$x5$\frac{3}{4}$-in. piece of round steel bar is welded. This acts as a driving plug, which prevents damage to the stake while it is driven into hard soil.

Pointing the stake posed a problem at first, until Eandi decided to forge it. This operation was accomplished by heating one end in a gas-fired furnace and then, by means of a die of his own design, forming it with a few blows of a hydraulic hammer forge.

Punched in the channel for most of its length are $\frac{7}{16}$-in. dia holes, so that nails can be driven through it into wood bracing, which is used to hold the concrete form in place.

After the stakes are driven—one opposite the other along the foundation—a $\frac{1}{4}$x$\frac{3}{4}$-in. steel tie bar, which is made in different lengths according to the foundation width, locks the two stakes rigidly in the desired position.



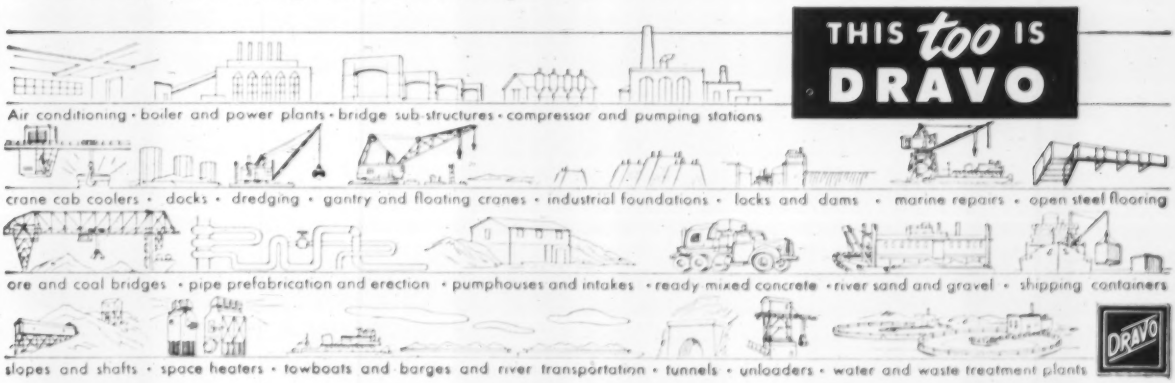
BARGES BOOST FLORIDA-MIDWEST COMMERCE

Twelve new barges now in operation on U. S. waterways are providing through service shipment of low-cost bulk commodities between Florida and the Midwest.

Formerly the high cost of transferring cargo from deep water vessels to river barges, as well as time lost in warehousing, made all-water transportation non-competitive.

Recognizing the future in this business if such expenses could be eliminated, officials of the A. L. Mechling Barge Lines, Inc., Joliet, Illinois, met with representatives of Dravo Corporation. In "Round Table" discussions, exchange of technical and operating information led to a new barge design which incorporated both the structural strength necessary in deep water operation and the low resistance and shallow draft required in the inland waterways.

Dravo has played an important part in many such projects aimed at furthering water transportation progress. This is another example of more than 60 years of service to business and industry in many fields, with customer satisfaction considered essential in every transaction. For more information write DRAVO CORPORATION, PITTSBURGH 25, PENNA.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Air conditioning • boiler and power plants • bridge sub-structures • compressor and pumping stations
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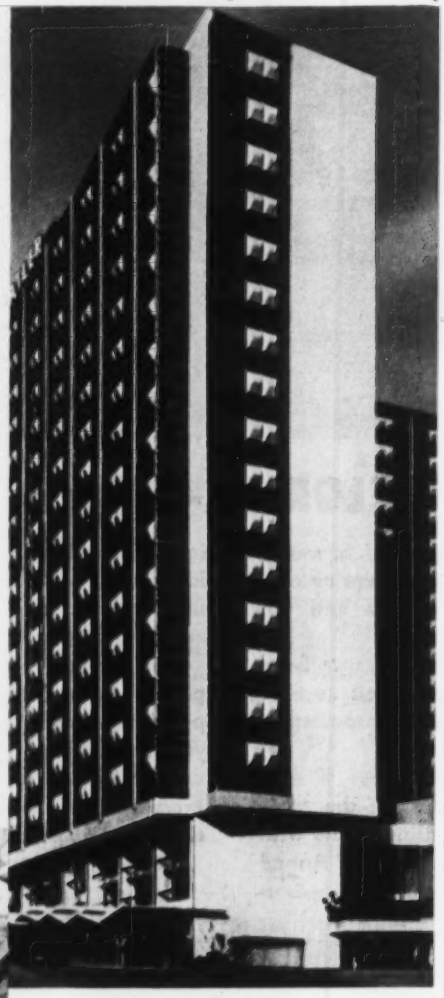
New Statler Hotels Leakproofed With "THIOKOL" Based Caulking Compound

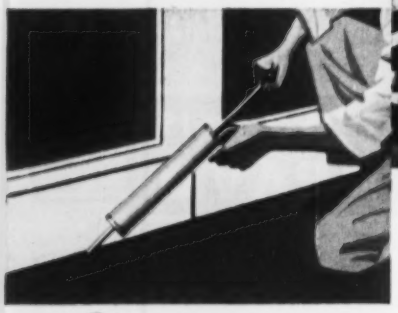
The modern window wall construction of the Statler-Hilton Hotels at Dallas, Texas, and Hartford, Connecticut demanded a caulking compound capable of leakproofing this type of structure.

For sealing the aluminum window frame to the concrete opening, a "Thiokol"-based compound manufactured by Products Research Company, PR-340, was chosen.

"Thiokol" liquid polymer, the basic ingredient of this compound is a solventless liquid that converts at ordinary temperatures to a resilient rubber. It insures a tenacious, durable seal even after years of weathering . . . and maintains resilience and adhesion at temperatures ranging from 250° above to 65° below zero.

To insure leakproof construction, take advantage of "Thiokol"-based glazing and caulking compounds. Information will be sent to you on request. WRITE: THIOKOL CHEMICAL CORPORATION, 784 North Clinton Avenue, Trenton 7, New Jersey. IN CANADA: Naugatuck Chemicals Division, Dominion Rubber Company, Elmira, Ontario.





Thiokol Chemical Corporation manufactures "Thiokol" Liquid Polymer only as a raw material. The PRC Window Sealant (aluminum) compound is manufactured by Products Research Company, 3126 Los Feliz Boulevard, Los Angeles 39, California.

Thiokol®

PIONEER MANUFACTURERS OF SYNTHETIC RUBBER

The membrane should possess a vapor penetration factor of 0.010 or less; be highly resistant to chemical fungus or insect conditions in the soil. It should be capable of withstanding foot traffic and normal abuse and it should possess expansion and contraction characteristics to absorb movements in the slab due to temperature variance.

All joints, laps and pipe entries should be sealed with a non-setting asphalt adhesive. The membrane should extend 6 in. above the finish floor level. Care should be exercised in placing the concrete slab to provide a smooth level surface to receive the ultimate floor treatment. An impermeable, resilient insulation having a constant thermal resistance of 1.0 Btu or more should be provided immediately above the slab to preclude the possibility of condensation.

• **Method No. 2**—Lay a vapor barrier or dampproofing membrane having a vapor penetration value of ½ or less directly over washed gravel fill. After the fill is topped with concrete, provide asphalt-saturated felt dampproofing over the slab, butting all edges.

When the exterior grade is above the level of the finish floor line, provide two or three layers of membrane, continuing up the inside wall to 6 in. above the floor slab. If asphalt-saturated felt is not laid over the concrete slab, the surface can be primed and covered with hot asphalt pitch from ¼ to ½ in. in thickness.

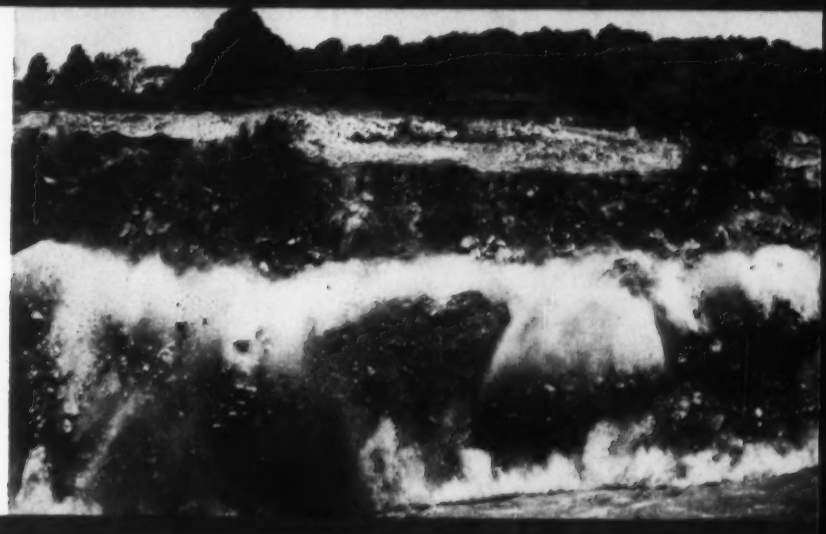
These suggestions eliminate the need for building paper between sub- and finish floor as well as making the provision for underfloor ventilation unnecessary, according to the MFMA.

Wagon Drill on Tractor Speeds Blasting Operation

McKenzie Construction Co. of Corpus Christi, Texas, employs a fast-moving, labor-saving tractor-wagon drill combination for drilling small blast holes (2 in. dia 12 ft deep) in a rock and caliche formation to feed its crushing plant on a South Texas Navy airfield job. Having an operator drag a wagon drill and compressor a few feet with a separate tractor, then dismount and start the drill was much too slow a process. The contractor uses a small tractor with wagon drill mounted on the front end. The tractor engine also drives the compressor which operates the drill. One man takes care of this end of the operation while a second places the charges and sets the wires and detonator.

EXPLOSIVES

RESEARCH



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There's no substitute for the right combination of explosives materials and the "know-how" for getting results that save both time and money. Hercules has specialized in the pioneering of improved explosives techniques for more than 40 years. We will be glad to assist you in selecting the right materials and blasting methods to meet your particular requirements.

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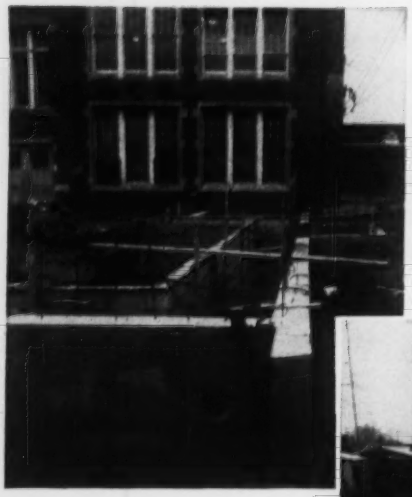
XR56-6

How to make a school foundation
water repellent, sturdy and *long lasting*

THOROSEAL
Foundation Coating



Correct procedure is shown here, where foundation is given 2 brush coats of THOROSEAL Foundation Coating, immediately after construction forms are removed.

Poured concrete exterior walls and tunnel walls, 2 coats of Foundation Coating, and inside concrete block walls, 2 coats of THOROSEAL

Bagley School
Pontiac, Michigan
Architect—William Zimmerman
Contractor—Nolan Gottschall

NO MAINTENANCE COST HERE!

THOROSEALING the foundation walls of this new school building, means less upkeep, less repairs. Water cannot penetrate masonry now and cause costly damage.

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STANDARD DRY WALL PRODUCTS INC.
NEW EAGLE, PENNSYLVANIA

Obituaries

Louis E. Baggs, 64, civil engineer with the Corps of Engineers, died recently. A graduate of the University of Iowa, Baggs early career was in the design and inspection of construction of structures for electric power transmission and manufacturing. He served with the Corps of Engineers on civil works planning and construction in the Rock Island, Eastport, Boston, and Memphis offices, and since 1942 had been assigned to the office of the President, Mississippi River Commission at Vicksburg.

Valens Jones, 51, Bureau of Reclamation engineer for 27 years, died Jan. 3. When he left the Bureau in December, 1954 to become a consulting engineer, Jones was head of the structural and foundations section of the agency's central laboratories. He was noted for his work in the development of procedures and equipment for testing concrete for dams and related structures.

Hollister Johnson, 64, retired hydraulic engineer of the United States Geological Survey, and an expert on flood control, died recently. In 1921, Johnson joined the Black River Regulating District and made, among others, surveys for Stillwater Reservoir and the Panther Mountain area in New York State. In Washington, D. C. until 1952, at which time he retired, he made and directed stream surveys throughout the nation. In 1953 he was awarded the distinguished service medal by the Interior Department.

Charles H. Lawrence, 82, founder of the Lawrence Construction Co. of Sacramento, Calif., died Dec. 29. Lawrence operated lumber yards in Los Angeles and Oakland before establishing a general contracting business in 1923 in Oakland. In 1932, the company shifted its headquarters to Sacramento, where his son now heads the firm.

Donald W. Taylor, 55, who for 23 years served on the faculty of the Department of Civil and Sanitary Engineering of the Massachusetts Institute of Technology, died Dec. 24. In 1932, he joined M.I.T. as research assistant in civil engineering. His promotion in 1934 to research associate was followed by successive appointments to the positions of assistant professor of soil mechanics, and associate professor of soil mechanics.

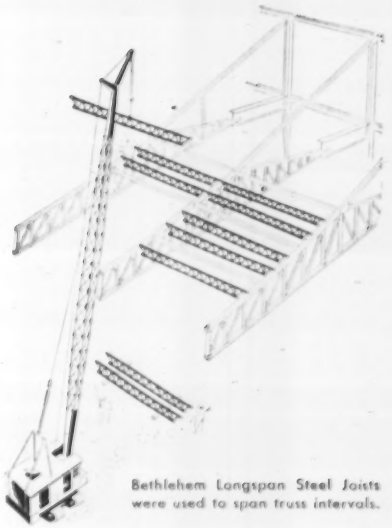
Hangar 8 at Idlewild was designed by the Port of New York Authority. *General contractor:* S. S. Silberblatt, Inc., New York City.

LONGSPANS HELP GIVE RIGIDITY TO CANTILEVERED HANGAR ROOF

The unusual roof construction of Hangar 8 at New York International Airport, Idlewild, allows for storage of nearly twice as many transports as the conventional bowstring truss roof. The hangar, constructed by the Port of New York Authority, houses airplanes of the United Air Lines fleet.

The structure, 440 ft long, has a 99-ft wide, two-story shop and office core in the center. Columns, projecting above this center core, support by suspension steel roof trusses cantilevered out 133 ft on either side, forming two huge bays, 440 ft by 133 ft, with no supporting columns.

Bethlehem Longspan Steel Joists were used to span truss intervals. The steel joists contribute to the necessary rigidity of the cantilevered roof sections, and also support the light-gage steel decking overhead. They reached the job site ready for immediate placing and field-welding secured them permanently and rigidly in place. Bethlehem steel joists also contribute to the fire-resistant construction of the hangar.



Bethlehem Longspan Steel Joists were used to span truss intervals.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast **Bethlehem** products are sold by **Bethlehem** Pacific Coast Steel Corporation. *Export Distributor:* **Bethlehem** Steel Export Corporation

BETHLEHEM LONGSPAN STEEL JOISTS

BETHLEHEM STEEL

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

† **Davison Constr. Co., Inc.**, 1306A Elm St., Manchester, N. H., LB $645,500, est. $600,000-$700,000. wing headquarters bldg., 4 squadron headquarters bldgs., guard house, commissary clothing bldg., library, chapel modification, Portsmouth Air Force Base, ENG-19-016-56-38, PORTSMOUTH, N. H. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Jan. 10. CD 1/6.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford.
Conn.—**Peter W. Kero**, 216 Washington Ave., Carlstadt, N. J., CA $5,808,640. 15,778 ft. c. conc. and 9 bridges, Stamford and Darien, Fairfield Co. CD 1/4;
Conn.—**Poirer & McLane Corp.**, 33 W. 42 St., New York, N. Y., CA $11,344,894. 16,628 ft. c. conc. paving, viaduct approx. ½ mi. over Miamus River, Greenwich and Stamford, Darien Co. Bids Nov. 21, awarded Jan. 12. CD 12/13, under LB.

BUILDINGS—LB & CA

John Bowen Co., Inc., 173 Boston St., Dorchester, Mass. LB $615,000, est. $462,000. ELEMENTARY SCHOOL, Mary Hemmenway Dist., Center St., Dorchester, BOSTON, MASS. City, Dpt. School Bldgs., 26 Norman St., Boston, Mass. Bids Jan. 11. CD 12/21.

▲ **Vappi Co., Inc.**, 240 Sidney St., Cambridge, Mass. CA Est. $3,000,000. DEPARTMENT STORE Unit No. 3, BOSTON, MASS. Jordan-Marsh Co., 450 Washington St., Boston, Mass. Bids Dec. 29. CD 12/7.

▲ **Walsh Bros.**, 150 Hampshire St., Cambridge, Mass. CA Approx. $1,000,000. DORMITORY, HANOVER, MASS. St. Coletta School, Washington St., Hanover, Mass. Bids Dec. 6. CD 11/30.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **New Jersey**—BA On Or About 2/16—AAA FACILITIES—U. S. Eng., 111 E. 16 St., New York 3, N. Y., Special AAA Facilities, vicinity of Hanover, Morristown, $500,000-$750,000. CD 7/19.

BUILDINGS—BA

Md., Sykesville—GERIATRICS BLDG.—BA 2/2—State Dpt. P. Imprvs., 506 Park Ave., Baltimore, Zone 1, masonry geriatrics bldg., Springfield State Hospital, $880,000. Plans deposit $50, Gaudreau & Gaudreau, 330 N. Charles St., Baltimore, Zone 1, archts. CD 5/8/53.

HEAVY CONSTRUCTION—LB & CA

† **Gahagan Constr. Corp.**, 90 Broad St., New York 4, N. Y. CA $617,401. dredging Sect. 4, Area 4, New York and New Jersey Channels, NEW YORK and NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 1/5, under LB.

▲ **Five Boro Constr. Co.**, 2 Lafayette St., New York 2, N. Y. CA $4,278,342. (10 bidders) general contract Greenpoint Incinerator, BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. CD 10/24, under LB.

Anthony Grace & Sons, 151-45 Sixth Rd., Whitestone, N. Y. CA $297,210. paving and utilities for Cargo Bldg. No. 48, Idlewild International Airport, IDLEWILD, N. Y. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids Dec. 20. CD 12/6.

Tunnel Constr. Co., 169 York St., Jersey City, N. J. CA $391,695. section of Stephenson Brook storm water drain between Station 30 plus 00 and 33 plus 50 (N. Y., N. H. & H. R.R. New England Thruway Crossing) Proj. No. 26-828-P2, NEW ROCHELLE, N. Y. P. Wks. Dpt., E. H. Feldman, dir., Council Chamber, City Hall, 515 Main St., New Rochelle, N. Y. Bids Nov. 30. CD 10/31.

▲ **P. J. Carlin Constr. Co., Barnaby Concrete Corp., Atlas Tile & Marble Works**, 41-17 Crescent St., Long Island City, N. Y. CA $1,276,660 (2 bidders) general contract, general superstructure for 74 Street Power Plant, Manhattan Boro, Constr. P-149-1, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. CD 10/4, under LB.

Macasphalt Constr. Corp., 33-15 Lawrence St., Flushing, N. Y. LB $274,705. Contr. No. 566, wid'n., sheet asph. repaving roadway of Third Ave. from E. 100 to E. 116 Sts., NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids Dec. 28. CD 12/19.

▲ **J. L. Murphy, Inc.**, 340 E. 44 St., New York 17, N. Y. CA $1,043,230. (3 bidders) furnishing, installing piping, misc. equip. for 74 Street Power Plant, Manhattan Boro, Constr. P-144, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. CD 12/5, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg. 1035 Parkway Ave., Trenton,
Herbert J. Elkins, Inc., 69 and Kingsessing Ave., Phila., Pa., CA, $1,109,623. grading, paving 1.329 mi. Rt. 29 Freeway Section 13B, Mercer Co. Bids Nov. 29. CD 12/2, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,
Lipsett, Inc., 210 S. 40 St., Phila. 4, Pa. CA $6,737,675. six prestressed, precast concrete bridges, one I-beam bridge, concrete retaining walls, 0.83 mi. long on Vine St. Extension, city of Philadelphia, L. R. 67045 (8), Philadelphia Co. CD 12/21, under LB.

▲ **Laub Constr. Co., Inc.**, 1518 Walnut St., Phila., Pa. CA $2,444,987. converting Queen Lane Water Filter Plant to rapid sand filters, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. CD 1/4, under LB,
Roberts Filter Mfg. Co., Darby, Pa. CA $1,947,220 filter equipment and piping. (Phila., Pa.).

† **Buck & Donohue Co.**, 79 Broad St., Newark, N. J. LB $496,949. (6 bidders) local flood protection and navigation proj., pumping stations, Bladensburg, Colmar Manor and Edmonston, Anacostia River Basin, CIVENG-49-080-56-23, MARYLAND and D. C. WASH., U. S. Eng., First and Douglas Sts. N. W., Wash., D. C. Bids Jan. 10. CD 12/16.

▲ **Nager Electric Co. & Keystone Eng. Corp.**, 426 Broadway, Brooklyn, N. Y. LB $2,245,000. Contr. P.T. 115, completing electric installation for tunnel structures, Patapsco Tunnel Proj., MARYLAND. State Rds. Comn., 108 E. Lexington St., Baltimore 2, Md. Bids Jan. 5. CD 11/23.

▲ **Square Constr. Co.**, 115 S. Haven St., Baltimore 24, Md. CA $2,767,190. Contr. PT 121, constr. viaduct over Bayview Yards of P. R.R. & B. & O. R.R., Patapsco Tunnel Proj., MARYLAND. State Rds. Comn., 108 E. Lexington St., Baltimore 2, Md. CD 12/5, under LB.

Eager Stone & Constr. Co., 708 E. Eager St., Baltimore 2, Md. LB $526,640. Patapsco Sewage Treatment Plant, complete plant, site imprvs., near Glen Burnie, ANNAPOLIS, MD. Anne Arundel Co., Sanitary Comn., Glen Burnie, Md. Walter C. Munroe, c/o owner, ch. engr. Robt. T. Regester, Baltimore Life Bldg., Baltimore 1, Md., consult. engr.

DELAWARE—State Hy. Dpt., Hy. Admin. Bldg., Dover,
Henry C. Eastburn & Son, Newark, Del., CA, $669,674 addnl. traffic lane along U. S. Rte 13 from Farmington through Harrington, Kent Co. Bids Dec. 21. CD 12/30, under LB.

BUILDINGS—LB & CA

▲ **Edward Corning Co.**, 204 E. 39 St., New York 16, N. Y. LB $2,079,000. (6 bidders) general constr. Baldwin HIGH SCHOOL, BALDWIN, N. Y. Bd. Educ., Union Free School Dist. No. 10, town of Hempstead, Baldwin High School, Pershing Blvd., Baldwin, N. Y. Bids Jan. 9. CD 12/6.
Norman Heating Co., Inc., 150 Nassau St., New York 7, N. Y. LB $352,000. (6 bidders) heating and ventilating work (Baldwin, N. Y.).
Rao Electric Equipment Co., Inc., 314 E. 39 St., New York 16, N. Y. LB $363,885. (7 bidders) electrical work. (Baldwin, N. Y.).

▲ **HRH Constr. Corp.**, 16 W. 46 St., and Gerace & Castagna, Inc., 16 W. 46 St., New York 19, N. Y. CA $8,586,000. joint venture. (9 bidders) general contract SUPREME COURT, Brooklyn Civic Center, Phase B, BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Grand total $12,692,452 CD 10/17, under LB;
Heating Maintenance Corp. of N. Y., 220 E. 138 St., New York 51, N. Y. CA $2,324,300. heating work, (Brooklyn, N. Y.);
John G. Heilman, Inc., 507 E. 76 St., New York 21, N. Y. CA $1,782,152. (6 bidders) electrical work (Brooklyn, N. Y.).

Point of Woods Homes, c/o Herman H. York, archt., 90-04 16 St., Jamaica, N. Y. Owner Builds. $750,000. 33 HOUSES on tract on Southdown Rd. west of Wall St., HUNTINGTON, N. Y.

▲ **George F. Driscoll Co., & Moccia Constr. Co.**, 41 E. 42 St., New York 17, N. Y. LB $4,348,000. (11 bidders) general constr.; LB $4,994,000. (11 bidders) foundations and general constr. for Mill Brook HOUSES Proj. No. NYS-65 Sect. I, incl. Bldgs. Nos. 5 to 9 (inclusive) area bounded generally by E. 137 St., Cypress Ave., E. 135 St. and St. Ann's Ave., Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Jan. 11. CD 11/30.
H. R. H. Constr. Corp., 16 W. 46 St., New York 19, N. Y. LB $663,000. (5 bidders). foundations (New York, N. Y.).
Harry Starkman & Bros., 348 Brook Ave., New York 54, N. Y. LB $530,220 (5 bidders) heating and ventilating work (New York, N. Y.).

Jesse E. Kahn & Co., 131 W. 21 St., New York 11, N. Y. LB $700,285. (9 bidders) plumbing work (New York, N. Y.).

Brown Electric Co., 250 E. 43 St., New York 17, N. Y. LB $429,400. (11 bidders) electrical work. (New York, N. Y.).

▲ **Olde Britton Estates**, c/o Alwin Cassens Jr., archt., 145 S. Franklin Ave., Valley Streams, N. Y. Owner Builds $2,000,000. 88 HOUSES, on tract at Old Britton Rd. and Columbus Ave., NORTH BELLMORE, N. Y.

▲ **Manetto Hill Estates**, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. $4,500,000. 226 HOUSES on 40 acre tract at Manetto Hill Rd., near Northern State Parkway, PLAINVIEW, N. Y.

▲ **Stewart M. Muller, Inc.**, 47 S. Riverside Ave., Croton, N. Y. CA $2,013,850. Sleepy Hollow High SCHOOL, Broadway and Bedford Rd., North Tarrytown, TARRYTOWN, N. Y. Bd. Educ., Tarrytown, N. Y. Bids Nov. 10. CD 10/31.

▲† **Paul Tishman, Inc.**, 20 E. 70 St., New York, N. Y. CA $3,155,381. permanent family HOUSING and related site imprvs., utilities, ENG-36-109-5639, FORT DIX, N. J. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Dec. 22, awarded Dec. 30. CD 1/10, under LB.

▲ **Raymond Homes**, c/o C. J. Kordys, archt., 116 Passaic St., Passaic, N. J., Owner Builds, $1,600,000. 78 HOUSES on tract at Ehret Ave. near Lafayette Rd., HARRINGTON PARK, N. J.

▲ **United Engineers & Constructors, Inc.**, 1401 Race St., Phila., Pa., CA, $129,000,000. ELECTRIC GENERATING STATION in Overpeck Creek, two 275,000 kw. turbine generator units, RIDGEFIELD, N. J. Public Service Electric & Gas Co., 80 Park Pl., Newark, N. J.

Spring Lake Heights Estates, c/o Harry Maslow, archts., 275 Morris Ave., Elizabeth, N. J. Owner Builds, $750,000. 50 HOUSES on tract on Ocean Rd. between Route 35 and 71, SPRING LAKE, N. J.

Saddel Rock Estates Homes, c/o Teaneck Realty Co., 1372 Teaneck Rd., Teaneck, N. J. Owner Builds, $750,000. 30 HOUSES on tract on West Saddle River Rd., UPPER SADDLE RIVER, N. J.

Dan Pollin, Inc., 1414 Upshur St. N. W., Wash., D. C. Owner Builds, $500,000, 35 brick semi-detached

(Continued on page 79)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

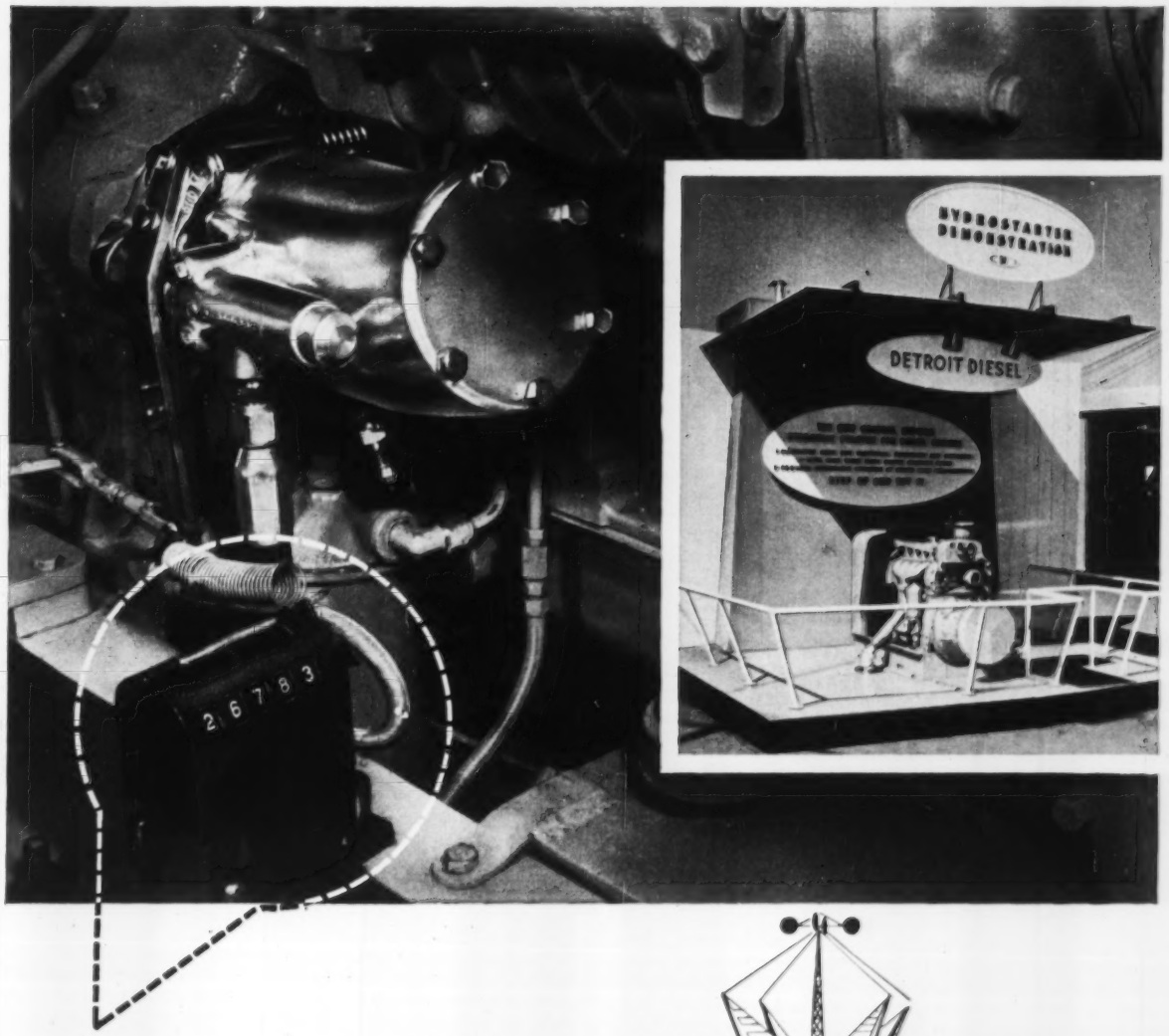
In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.



26,783 Starts in 26 days at GM Powerama!

HERE'S PROOF of the rugged dependability of a General Motors Hydrostarter—the new, low-cost hydraulic starting system now available on all GM Detroit Diesel engines:

On public demonstration at the GM Powerama, a Hydrostarter started a GM Detroit Diesel 26,783 times in 26 days—an average of more than 1,000 starts per 12-hour day—more than 1 start every minute.

A Hydrostarter gets a GM Detroit Diesel up to starting speeds 80% faster than regular starting systems—costs less to maintain than electric starters—sells for a far lower price than any other non-electric Diesel starter.

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Engine Division of
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Multiple Units . . . Up to 893 H.P.

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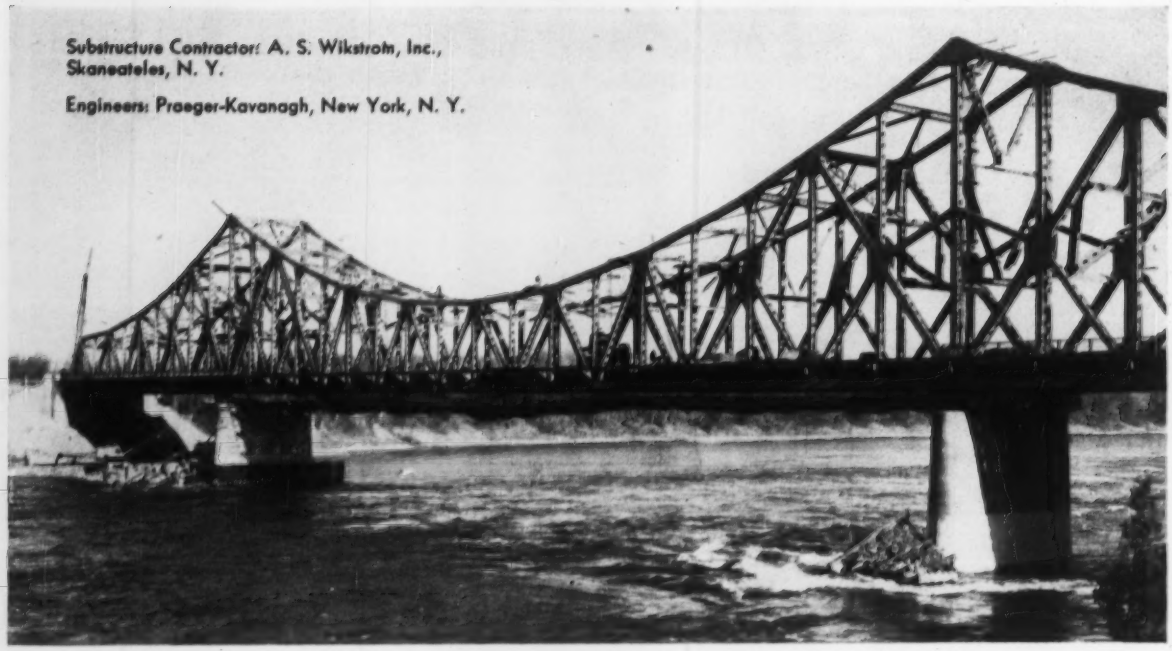
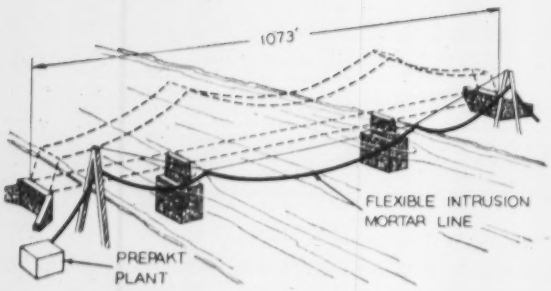


Substructure Contractor: A. S. Wikstrom, Inc., Skaneateles, N. Y.

Engineers: Praeger-Kavanagh, New York, N. Y.

At St. Lawrence Power Project the $5-million Barnhart Island Bridge [above] was built under tough, hazardous conditions. Here's . . .

How Bridge Builder Licked 16-mile current, 14-month deadline



Valuable time and cost of a second plant set-up were saved by pumping all INTRUSION mortar for 13,500 cu. yds. of PREPAKT concrete from one plant on U.S. mainland. To reach north abutment an 1100-foot line was hung across river.

In building the substructure for the Barnhart Island Bridge, the contractor had to fight a destructive 16 mph river flow and an almost impossible schedule. The 1073-foot continuous-truss bridge provides access to the Power Plant and Long Sault Dam on the island—heart of the St. Lawrence Power Development Project.

Use of the PREPAKT method for placing all concrete in the bridge contributed to the project's success. Speed, flexibility of operation and high quality underwater concrete resulted from the PREPAKT technique of consolidating preplaced aggregate with INTRUSION mortar.

Specifications allowed PREPAKT concrete in underwater portions, but the contractor was permitted to use it for the entire substructure. This allowed speedy placement of coarse aggregate directly into cofferdams from cranes working on dikes. All INTRUSION mortar for both piers and both abutments, the remainder of the concrete, was mixed and pumped from a single, shore-based PREPAKT plant. A flexible pumping line avoided time-consuming relocation of the plant.

The fast, simplified placement of PREPAKT concrete under difficult conditions is one of the many advantages of this method.

Prepakt maintains a complete field construction organization plus an engineering service, and functions as prime or sub-contractor. For further information, write: Intrusion-Prepakt, Inc., Room 779-H, Union Commerce Building, Cleveland.

Intrusion and *Prepakt* are trade marks of Intrusion-Prepakt, Inc., whose methods and materials are covered by U. S. Patents Nos. 2313110, 2655004, 2434302 and others, also patents pending.

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(Continued from page 76)

HOMES, in Riggs Park, WASH., D. C. Berla & Able, archts., 1636 Connecticut St. N. W., Wash., D. C., archts.

▲ **Gunnell Constr. Co., Inc.**, Tower Bldg., Wash., D. C., LB, **$1,969,000** (14 bidders) PSYCHIATRIC BLDG., D. C. General Hospital, 19 and C Sts., S. E., WASH., D. C. D. C. Govt., Dir. Bldgs. & Grounds, 499 Pennsylvania Ave. N.W., Wash., D. C. Bids Jan. 12. CD 12/19.

L. E. Breuninger & Sons, Inc., 1730 K St. N. W., Wash., D. C., CA, **$500,000**, 8 story, brick, concrete, 89-unit HOTEL, 601 19 St. N. W., WASH., D. C. 601 19 St. Inc., 1730 K St. N. W., Wash., D. C. Santmyers & Thoman, 2209 L St. N. W., Wash., D. C., archts.

† **Carl Gonnsen & Son**, 6210 Belair Rd., Baltimore 6, Md. CA **$460,332**. Schedule 1A, 9-type D-36 family HOUSING units for enlisted men, Aberdeen Proving Grounds, ENG-18-020-56-10, ABERDEEN, MD. AND NEW CUMBERLAND, PA. U. S. Erg., Box 1715, Baltimore 3, Md. CD 12/21, under LB,
Reisinger Bros., Box 516, Carlisle, Pa. CA **$514,822**. Schedule 2A, four 32-family HOUSING units, for enlisted men; 7 bldgs. for SENIOR OFFICERS' QUARTERS, 1 bldg. for COLONEL'S QUARTERS, New Cumberland General Depot, Pa. (Aberdeen, Md. and New Cumberland, Pa.).

SOUTH

HEAVY CONSTRUCTION—BA

Ky., Louisville—BA 1/26—City, City Hall, bridge and street imprvs. on Brownsboro Rd., Job No. 5775, $400,000, Hazlett $ Erdal, 403 Commerce Bldg., engrs. CD 8/27/52.

HEAVY CONSTRUCTION—LB & CA

▲† **Atlantic, Gulf & Pacific Co.**, 15 Park Row, New York, N. Y., LB **$1,528,348**, dredging 2,700,000 cu. yd. Naval Base Exten., U. S. Naval Base, NOY 91411, Spec. 48315, NORFOLK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Jan. 10. CD 11/10.

▲† **Clemens Constr. Co.**, P. O. Box 3331, West Palm Beach, Fla., CA, **$1,071,100**. Central and Southern Florida Flood Control, Palm Beach Co., ENG-08-123-56-31, FLORIDA. U. S. Eng., P. O. Box 4970 Jacksonville, Fla. Bids Dec. 21, awarded Dec. 30. CD 1/4, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery, Ala.—**Deep South Constr. Co.**, Montgomery, Ala., LB, **$92,167**, base, bit. 8.718 mi. road from Cottrene N. to U.S. 80, Lowndes Co.; LB **$109,835**, bit, 4.328 mi. from U.S. 231 to Allenport, Montgomery Co;

Ala.—**Ashburn & Gray**, Huntsville, Ala., LB, **$196,963**, base, bit. 3.375 mi. relocation U.S. 72 S. and W. of Athens, Limestone Co.; LB **$305,059** bit., bridges 1.55 mi. north of Huntsville from Huntsville Parkway to U.S. 72, Madison Co.;

Ala.—**J. R. Bryan Contg. Co.**, 121 Moulton St., Montgomery, Ala., LB, **$508,672**, bit. 3.386 mi. Ala. 20 from Chemstrand to Bank St. in Decatur, Morgan Co.; LB **$182,868**, bit. 5.899 mi. from Gadsden to Rainbow City and Municipal Airport, Etowah Co.;

Ala.—**Stockbridge Stone Co.**, 2019 6 Ave. N. Birmingham, Ala., LB, **$272,175**, crushing rock aggreg. at Burden Quarry, vicinity of Florette, Morgan Co.;

Ala.—**J. W. Gwin Jr., Inc.**, Comer Bldg., Birmingham, Ala., LB, **$96,215**. bit. 6.115 mi. road from Jones Chapel N.E. to Cross Roads Church, Cullman Co.;

Ala.—**Couch Constr. Co.**, Dothan, Ala., LB **$469,595**, bit. 4.021 mi. U.S. 231 from Dothan north, Houston, Co.;

Ala.—**Clyde O. Mitchell**, 104 N. 44 St., Birmingham, Ala., LB, **$265,365**, bit. 8.186 mi. road from Mt. Pisgah Church to County Line, Etowah Co.;
cancelled bids to have been opened Jan. 6, bit. 6.857 mi. road from Wetumpka N. W. to SACP-401-B, Elmore Co.

BUILDINGS—LB & CA

Gustav Hirsch Organization, Inc., 1347 W. 5 Ave., Columbus, O., CA, **$989,540**, electrical work for main MILL BLDG. of chemical plant, RAVENSWOOD, W. VA. Kaiser Aluminum & Chemical Corp., Kaiser Bldg., 1924 Broadway, Oakland, Calif. CD 10/11.

▲† **The Jordan Co.**, Columbus, Ga. CA **$1,299,685**, family housing, Serial No. ENG-09-133-56-30, FORT BENNING, GA. U. S. Eng., 200 East St. Julian St., Savannah, Ga. Bids Dec. 28. CD 11/11.

Gates Constr. Co., 1523 Grand Central Ave., Tampa, Fla., LB, **$565,128**, Palmetto Junior-Senior HIGH SCHOOL, Palmetto, BRADENTON, FLA. Bd. P. Instruction, Bradenton, Fla. Bids Jan. 10. CD 1/4.

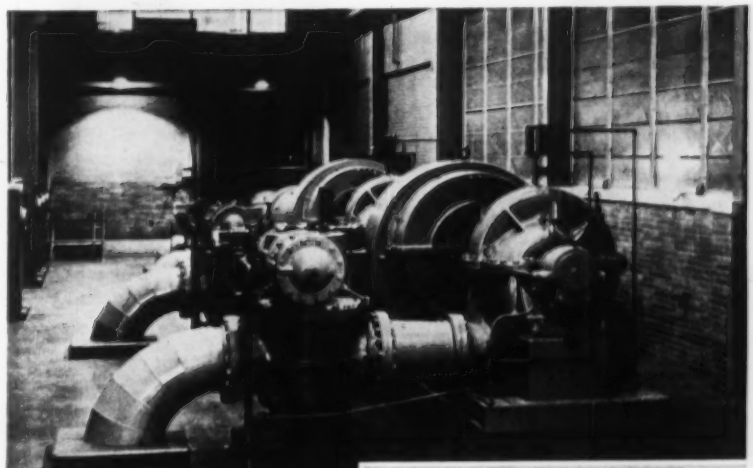
Fred Howland, Inc., 1451 N.W. 20 St., Miami, Fla., CA, **$617,625**, Southwest Miami Senior HIGH SCHOOL, S.W. 48 St. and 88 Ave., MIAMI, FLA. Bd. P. Instruction, School Admin. Bldg., 275 N.W. 2 St., Miami, Fla. Bids Dec. 21, awarded Jan. 4. CD 1/4, under LB.

▲ **Blaw-Knox Co., (Chemical Plants Div.)** 930 Fort Duquesne Blvd., Pittsburgh, Pa., CA **$3,000,000**. design and construct polyvinyl chloride resin PLANT, near PENSACOLA, FLA. Escambia Bay Chemical Co., P. O. Box 467, Pensacola, Fla.

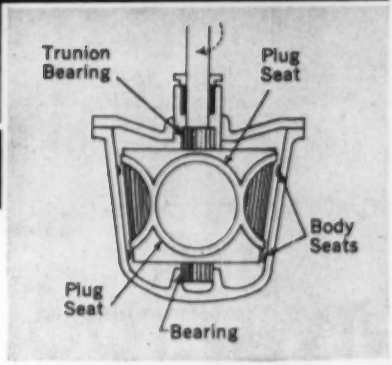
MIDDLE WEST

HEAVY CONSTRUCTION—LB & CA

Emil Marcelletti, 25 W. Monroe St., Bedford, O., CA **$850,495**, est. $1,150,000. 24 in. main in Sprague and Avery Rds., CLEVELAND, O. City, Dpt. Water & Heat, Frank J. Schweimer, Comm., City Hall, Cleve-



SMS
ROTOVALVES



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land 14, O. Bids Dec. 29, awarded Jan. 11. CD 1/6, under LB.

BUILDINGS—LB & CA

▲ **Huber, Hunt & Nichols, Inc.**, 2450 S. Tibbs St., Indianapolis, Ind., CA est. $13,000,000. PLANT, LIMA, O. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. Awarded Jan. 11. CD 6/14.

Fred W. Entenman, Inc., 3323 Secor Rd., Toledo, O., CA $367,000, general constr. 3 fireproof COTTAGES, Lucas County Childrens Home, MAUMEE, O. Comrs. Lucas Co., Court House, Toledo, O. Bids Dec. 29, awarded Jan. 4. CD 1/6, under LB.

Austin Co., 16112 Euclid Ave., Cleveland 12, O. CA design and construct, 2 story 172x351 ft. STORE, est. $800,000; WAREHOUSE, YOUNGSTOWN, O. The Austin Co., 16112 Euclid Ave., Cleveland 12, O. (Sears Roebuck & Co., 925 S. Homan St., Chicago, Ill., lessee). CD 8/8.

Schinnerer & Truemper, Inc., 5212 S. Hanna St., Fort Wayne, Ind., CA Total est. $500,000. general contract wholesale drug firm WAREHOUSE and SALESROOM, FORT WAYNE, IND. Fort Wayne Drug Co., 127-131 W. Wayne St., Fort Wayne, Ind. A. M. Strauss, Inc., Strauss Bldg., Fort Wayne, Ind., archt.

Industrial Piping & Eng. Co., 1340 Grant St., Fort Wayne, Ind., CA, heating and sprinkler work (Fort Wayne, Ind.).

▲ **Joseph T. Carp, Inc.**, 5640 N. West Highway, Chicago, Ill., CA, $2,500,000. 140 HOMES, DES PLAINES, ILL. Cumberland Village Home, 111 W. Monroe St., Des Plaines, Ill. Lowenberg & Lowenberg, 111 W. Monroe St., Chicago 3, Ill., archts.

O. F. Heinz Constr. Co., P. O. Box 597, Peoria, Ill., CA Total est. $600,000. ASSEMBLY and REPAIR SHOP addn., OFFICE BLDG. addn., and NEW EQUIPMENT SERVICE BLDG. at Peoria Proving Ground Facility, EAST PEORIA, ILL. Caterpillar Tractor Co., 1937 Walker St., Peoria, Ill. Bids Oct. 24. CD 10/5;

Chicago Bridge & Iron Co., 1305 W. 105 St., Chicago 43, Ill., CA, elevated tank (East Peoria, Ill.).

▲† **Wm. E. Schweitzer**, 2207 Dodge St., Evanston, Ill., CA, $1,320,620, B.O.Q. Facilty, GREAT LAKES, ILL. Ninth Naval Dist., Great Lakes Naval Training Station, Great Lakes, Ill. Bids Dec. 22, awarded Dec. 6. CD 1/5, under LB.

▲ **Monterey Builders, Inc.**, 5715 Milwaukee St., Chicago, Ill., Own Forces, $3,200,000. 160 HOMES, near PARK RIDGE, ILL. A. J. Del Branco, 5501 Irving Park Rd., Chicago, Ill., archt.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† **Tex., Port Isabel**—PAVEMENTS—BA 2/29—Bureau Yards & Docks, Dpt. Navy, Admin. Bldg. No. 1, Naval Air Station, Corpus Christi, airfield pavements, Naval Auxiliary Air Landing Field, NOY 86993. $1,000,000. Extended date. CD 12/8.

BUILDINGS—BA

▲ **Mont., Billings**—COURT HOUSE—BA 2/21—Yellowstone Co., Court House, 8 story, bsmnt., 100x140 ft., steel court house. $1,500,000, Chandler C. Cohagen, Hedden Bldg., archt. CD 7/27/54.

▲ **Kan., Dodge City**—SCHOOL—BA 3/5—School Dist. No. 1, Ford Co., Frank B. Tealson, supt. Schools, 250x500 ft. Junior High School. $1,000,000, Williamson & Loebsack, 1245 Topeka St., Topeka, archts. CD 8/25.

HEAVY CONSTRUCTION—LB & CA

IOWA—State Hy. Comn., Ames,

Hanson Constr. Co., Washington, Iowa, LB, $305,938, bridges and culverts U 273 (7), Woodbury Co. Bids Jan. 10. CD 1/3.

▲ **IOWA**—State Hy. Comn., Ames,

Iowa—Green Constr. Co., 321 Locust St., Des Moines, Iowa, LB $107,393, c. conc. pavement wid'n. 5.632 mi., wid'n. FN-317, Black Hawk Co. LB $350,464, c. conc. pavement wid'n. 18.432 mi., wid'n. P-1077 Black Hawk and Grundy Counties; LB $320,683. c. conc. pavement wid'n. 16.526 mi., wid'n. P-48W, Grundy Co.; LB $202,048, c. conc. pavement wid'n. 10.019 mi., wid'n. P-1081W, Marshall Co.;

Iowa—Hallett Constr. Co., Crosby, Minn., LB $210,306, c. conc. 0.931 mi. U-57 (5), Henry Co.; LB $129,820, c. conc. 0.668 mi. U-151 (4), Henry Co.;

Iowa—Iowa Road Building Co., Fairmont, Minn., LB, $131,602, b. conc. 5.286 mi. Special F-940 (2), Buchanan Co.; LB $148,444. b. conc. 4.204 mi. Special P-1061 (b), Dickinson Co.;

Iowa—Woodrich Constr. Co., Hopkins, Minn., LB, $141,018, c. conc. pavement wid'n. 7.05 mi., wid'n. P-1082, Dickinson Co.; LB $243,634, c. conc. pavement wid'n. 11.814 mi., wid'n. P-725 W (1) Osceola Co.; LB $148,946, c. conc. pavement wid'n. 7.387 mi., wid'n. P-725W (2), Osceola Co.;

Iowa—Ralph Green & W. L. Groesbeck, 321 Locust St., Des Moines, Iowa, LB $143,483. grading 10.088 mi. F-1049 (2), Black Hawk and Buchanan Counties;

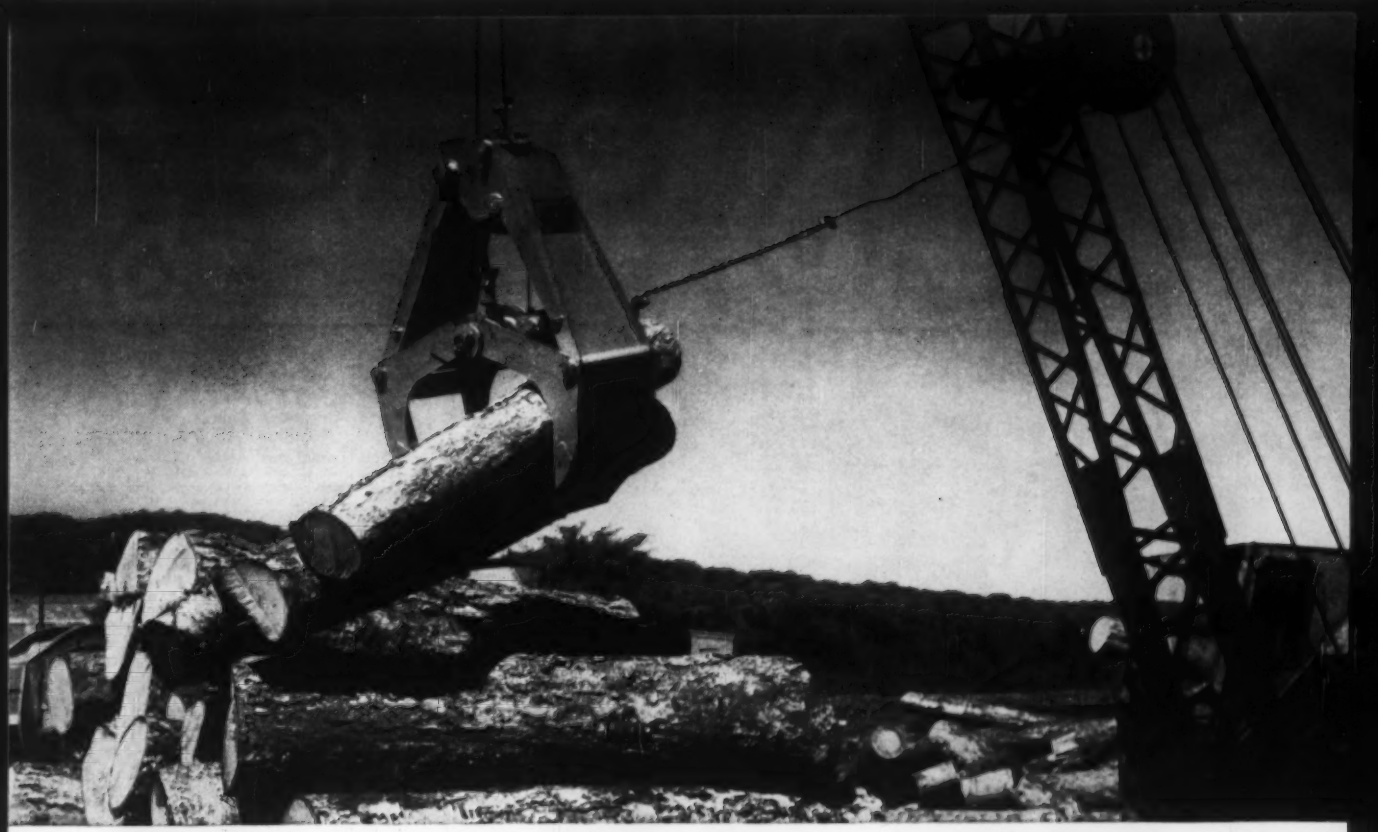
Iowa—Godberson-Smith Constr. Co., Ida Grove, Iowa, LB $103,065, c. conc. pavement wid'n. 3.688 mi., wid'n. FN-248W, Ida Co.;

Iowa—E. M. Duesenberg, Inc., Clear Lake, Iowa, LB $520,434. c. conc. 14.586 mi. Special FN-939 (5), Buena Vista and Pocahontas Counties;

Iowa—Booth & Olson, Inc., 529 Insurance Exchange Bldg., Sioux City, Iowa, LB, $481,986, c. conc. 9.179 mi. F-1023 (1), Carroll and Guthrie Counties;

Iowa—Fred Carlson Co., Decorah, Iowa, LB $97,627, c. conc. 2.075 mi. Special F-75 (6), Marion Co. Bids Jan. 10. CD 1/3.

(Continued on page 82)



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It isn't the logs that wear out log grapples like these. But dropping the grapples 10, 25, or 30 feet, twice a minute, hour after hour, day after day, does wear them out. They literally destroy themselves. That's why light weight is important. And toughness. And strength.

Mack Welding Company, Duluth, Minnesota, has cut weight of grapples 620 lbs. and simultaneously *increased* durability, just by switching from mild steel to rugged USS "T-1" Steel. Here is what they say about "T-1":

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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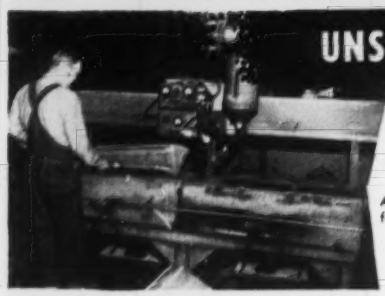

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with right-angle digging . . . and new comfort for the operator

It takes modern production methods to produce quality at a price you can afford. That's why you get more for your money in Davis equipment. This new Back hoe is loaded with features you've dreamed about, yet sells for a price less than the average. It digs at right angles . . lets you always face your work and see clear to the bottom of the hole, even at 13 feet deep . . has an extra comfortable seat . . . extra wide frame with individually controlled hydraulic stabilizers . . . detaches in less than five minutes, leaving tractor available for other work.

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America's Quality Loader

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(Continued from page 80)

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Borden Constr. Co.**, Zapata, Tex., LB **$92,889,** flexible base, two course surf. tr. 3.973, mi. Hy. SH 359. Proj. C 86-5-8. Duval Co.;

Tex.—**J. O. Boswell,** 311 Paris Ave., Lubbock, Tex., LB **$199,885,** flexible base, b. conc. surf. tr. 15.396 mi. Hy. US 84 and FM 2282 and 2106, Garza and Lynn Counties;

Tex.—**Cage Bros.**, 6959 San Pedro St., San Antonio, Tex. LB **$270,579,** widen pavement, flexible base, hot mix b. conc. 6.749 mi. Hy US 79 Proj. F 494 (7), Milam Co.;

Tex.—**E. E. Hood & Sons,** Box 6097, Harlandale Station, San Antonio, Tex., LB **$330,863,** flexible base, b. conc. 8.359 mi. Hy. US 290, Proj. F 46 (8), etc. Gillespie Co.;

Tex.—**The Jarbet Co.**, Box 5008, Beacon Hill Station, San Antonio, Tex., LB **$243,344,** flexible base, b. conc. 6.374 mi. Hy. US 190, Proj. F 604 (3), Brazos Co.;

Tex.—**George Kies,** 1303 Robert E. Lee Rd., Austin, Tex., LB **$112,833,** grading, structures, base, surf. 7.477 mi. Hy. FM 2134, Proj. S 2035 (1), Concho Co.; LB **$151,479,** grading, structures, base, surf. 12.965 mi. Hy. FM 1026. Proj. S 1432 (2), Coleman Co.;

Tex.—**Norman L. Larson, Dean Skinner, Contr. and C. H. Harrison Co.**, P. O. Box 5216, Austin, Tex., LB **$1,335,532,** grading, structures 15.2 mi. Hy. US 67, Proj. IN 800 (10), Hunt Co.;

Tex.—**Muhl Electric, Ltd.**, 719 W. 9 St., Houston, Tex., LB **$73,055,** illumination sys. 1.91 mi. Hy. US 90, Proj. UI 56 (11), Jefferson Co.;

Tex.—**Public Constr. Co.**, P. O. Box 380, Denton, Tex. LB **$85,914,** b. conc. 14.831 mi. Hy. US 69 and SH 64, Proj. C 190-5-16, etc., Smith Co.;

Tex.—**Jeff Richards,** 515 Hackberry St., Clifton, Tex. LB **$159,030,** seal coat 186.683 mi. US 281, SH 22, 36, FM 436, etc. Proj. C 121-1-9, etc. Bosque, Bell, Hamilton, McLennan, Falls, Hill, Coryell and Limestone Counties;

Tex.—**T. E. Sanderford,** P. O. Box 58, Belton, Tex., LB **$88,345,** grading, structures, base, surf. 9.912 mi. Hy. FM 1241. Proj. S 2085 (1), etc. Coryell and Hamilton Counties;

Tex.—**Dean Skinner, Contr.**, P. O. Box 4057, Austin, Tex., LB **$85,777,** grading, structures, base, surf. 5.135 mi. Hy. FM 533, Proj. R 2167-1&2, etc. Gonzales and Lavaca Counties;

Tex.—**C. Hunter Strain & Harry Newton, Inc.**, P. O. Drawer 1631, San Angelo, Tex., LB **$598,251,** grading, structures 8.638 mi. Hy. FM 2272, Proj. S 2009 (2), etc. Armstrong Co.;

Tex.—**Texas Bitulithic Co.**, P. O. Box 10365, Dallas, Tex., LB **$1,967,247,** c. conc. 5.211 mi. Hy. US 77. Proj. IN 22 (8), Dallas Co.; LB **$344,549,** foundation course, b. conc. and c. conc. 2.612 mi. Hy. US 287, Proj. F 451 (4), Wilbarger Co.;

Tex.—**Uvalde Constr. Co.**, P. O. Box 10286, Dallas, Tex. LB **$319,402,** grading, storm sewer, grade separation structures, c. conc. 0.714 mi. Hy. Loop 12. Proj. F 1089 (14), etc., Dallas Co. Bids Jan. 10. CD 12/16. 12/28.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Austin Contr. Co.**, P. O. Box 1590, Dallas ,Tex. LB **$74,959,** addn. base, two course surf. tr., b. conc. 10.758 mi. Hy. FM 51. Proj. S 874 (7), Wise Co.;

Tex.—**D. H. Buchanan Constr. Co.**, 1318 N. 5 St., Temple, Tex., LB **$105,521,** grading, structures, base, surf. 11.037 mi. Hy. FM 152 and FM 2242. Proj. S 1103 (2), Mason and Llano Counties;

Tex.—**R. B. Butler, Inc. & F. C. Herrling,** P. O. Box 471, Bryan, Tex., LB **$159,271,** grading, structures, base, surf. 9.645 mi. Hy. FM 979 and 2159. Proj. R 1210-2-1, etc., Robertson Co.;

Tex.—**Allan M. Campbell Co. General Contractor,** P. O. Box 836, Tyler, Tex., LB **$1,030,189,** flexible base, hot mix b. conc. 10.748 mi. Hy. US 190 and ST 63. Proj. F 930 (8), Jasper Co.;

Tex.—**Cooper & Woodruff, Inc.**, 204 Mays Bldg., Amarillo, Tex., LB **$354,512,** grading, structures, base, surf. 22.148 mi. Hy. FM 377 and 1265. Proj. S 967 (2), etc., Ochiltree and Lipscomb Counties;

Tex.—**W. S. Crawford Co. & R. N. Adams,** 5350 Montrose Dr., Dallas, Tex., LB **$674,561,** grading, structures, roadbed tr. 3.92 mi. Hy. US 77. Proj. FF 117 (10), Denton Co.; LB **$566,653,** flexible base, b. conc. 4.502 mi. Hy. US 175 and SH 34 and 243. Proj. F 136 (12), etc., Kaufman Co.;

Tex.—**Gaylord Constr. Co.**, 806 Blodgett St., Houston, Tex., LB **$363,884,** conc. pavement wid'n., flexible base, b. conc. 7.742 mi. Hy. SH 36 and 159, Proj. F 465 (4), Austin Co.;

Tex.—**L. H. Lacy Co.**, 5630 Yale Blvd., Dallas, Tex., LB **$717,813,** c. conc. 2.269 mi. Hy. US 175 and Loop 12. Proj. U 860 (11), etc., Dallas Co.;

Tex.—**Hugh McMillan,** P. O. Box 1227, El Paso, Tex., LB **$163,320,** seal coat 172.7 mi. Hy. US 90, 67, 62, 180, etc. Proj. C 2-14-5, El Paso, Jeff Davis, Culberson, Presidio and Hudspeth Counties;

Tex.—**Holland Page,** P. O. Box 1181, Austin, Tex., LB **$608,484,** flexible base, two course surf. tr. 15.638 mi. Hy. SH 29 and US 83. Proj. S 2080 (1), Menard Co.;

Tex.—**Pelphrey-Farquhar, Inc.**, 1412 Electric Bldg., Fort Worth, Tex., LB, **$214,509,** grading, structures, base, surf. 13.412 mi. Hy. FM 1304 and 1242. Proj. R 2059-1 & 2, etc. Hill Co.;

Tex.—**M. E. Ruby & H. & H. Constr. Co.**, San Marcos, Tex. LB, **$98,790,** grading, structures, base, surf. 6.309 mi. Hy. FM, Proj. R 1265-1-3, Fayette Co.;

Tex.—**Trotti & Thomson, Inc.**, P.O. Box 70, Beaumont, Tex., LB **$1,667,127,** c. conc. 2.473 mi. Hy. US 90, Proj. UI 56 (12), Jefferson Co.;

Tex.—**T. R. Vardeman & Son,** P.O. Box 485, Nacogdoches, Tex., LB **$76,388,** flexible base, two course surf. tr.

(Continued on page 84)

SUPERIOR

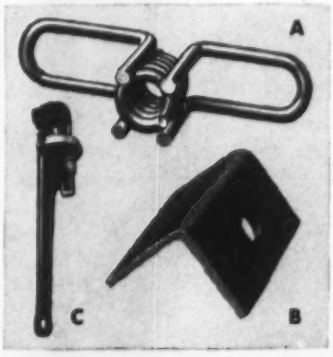
CONTINUOUS THREADED COIL RODS . . . . . MAKES DIFFICULT TYING JOBS Easy . . . . .

Superior Continuous Threaded Coil Rods, with or without Coil Wing Nuts and Corner Brackets, are a valuable supplement to Superior Coil Ties and standard working parts when job conditions are unusual or difficult.

In three typical applications, shown at the right, these Continuous Threaded Rods are used; (1) to tie form corners; (2) as an anchor rod tie down and as coil bolts; and (3) as a coupling for two coil ties providing an adjustable form tie.

Available in ½", ¾", and 1" diameters and in any length up to 10 ft., Superior Continuous Threaded Coil Rods in quantities can be cut to length on the job with a heavy-duty hand Coil Rod Cutter.

Superior Continuous Threaded Coil Rods are the answer to unusual or difficult tying problems. When you use Superior you are assured of the *best* in design, material, and workmanship.

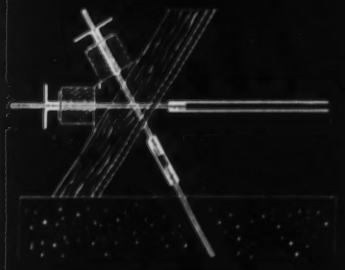


A-COIL WING NUTS
Coarse helix coils form the threads. Easily applied and removed from rod. Develops maximum capacity of rods.

B-CORNER BRACKET
An *exclusive* Superior feature. Provides simple, efficient method of tying form corners and bulkheads.

C-SPECIAL COIL ROD WRENCH
Heavy-duty Stillson type wrench with special jaws for gripping and turning Coil Rods with least damage to threads.

ON FORM CORNERS



FOR ANCHORAGE

AS AN INTERNAL TIE
Two Coil Ties and a length of Coil Rod make an adjustable form tie and spreader.

SUPERIOR CONCRETE ACCESSORIES, INC.
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NOW AVAILABLE . . . LATEST EDITION OF CATALOG 500. Contains a valuable table for spacing studs, wales, and form ties. REQUEST A COPY TODAY.

(Continued from page 82)

5.227 mi. Hy. SH 103. Proj. F 1094 (5), Angelina and Nacogdoches Counties;

Tex.—**Worrell & Watkins and Borden Constr. Co.,** Rte. 8, Box 166-A, Dallas, Tex., LB,**$503,316,** flexible base, b. conc. 6.716 mi. Hy. US 290. Proj. F 177 (2), etc., Hays and Travis Counties. Bids Jan. 11. CD 12/28, 12/16.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**R. B. Butler, Inc. & J. H. Howard,** P. O. Box 471, Bryan, Tex., LB **$456,608,** 3.817 mi. three bridges and approaches, Hy. FM 729, Proj. E 1018-3-6, Marion Co.;

Tex.—**Williams Bros. Constr. Co.,** 3311 Montrose Blvd., Houston, Tex., LB **$900,449,** 1.681 mi. San Jacinto River Bridges and approach, grading, structures, flexible base, b. conc. pavement Hy. US 75. Proj. IN 370 (11), Montgomery Co. Bids Jan. 11. CD 12/28, 12/16.

▲ **TEXAS**—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin,

Gage Brothers, 6959 San Pedro St., San Antonio, Tex. LN **$1,016,848.** continuous rolled beam and concrete girder bridges at Cedar St., Riverside Dr., Sycamore Creek, Beach St., Oakland Blvd. and Boaz Creek, Proj. D-FW 44, Tarrant Co. Bids Jan. 10. CD 12/27.

TEXAS—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin,

Texas Bitulithic Co., P. O. Box 10365, Dallas 7, Tex. LB **$522,360,** Proj. D-FW-45, continuous rolled beam and plate girder bridges at Hale Cement Spur R. R., Westmoreland Rd., Edgefield Ave. and Sylvan Ave., Dallas. Bids Jan. 11. CD 12/27.

Southwestern Public Service Co., Rule Bldg., Amarillo, Tex. Own Forces. **$282,000,** 21 mi. 115,000-volt transmission line, Littlefield, TEXAS.

† **Warner Constr. Co.,** Holcomb-Blanton Bldg., San Angelo, Tex., LB **$879,039** base, **$606,129** Alt., est. $638,990 base, $914,636 Alt., dining hall and dormitories, Goodfellow Air Force Base, ENG-51-443-56-54, SAN ANGELO, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids Jan. 10. CD 12/14.

▲† **Detweiler Inc.,** Twin Falls, Idaho. LB **$1,225,689,** est. $1,390,523. heating plant, Glasgow Air Force Base, Inv. 56-14, GLASGOW, MONT. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Jan. 10. CD 12/28.

BUILDINGS—LB & CA

C. H. Peterson Constr. Co., National Bldg., Minneapolis, Minn. LB **$458,550.** (6 bidders) general contract, elementary SCHOOL at Brooklyn Center W. of Hy. 252 and S. of 57 Ave. N., ROBBINSDALE, MINN. Bd. Educ., Independent School Dist. No. 24, H. V. Michelson, clk., Robbinsdale, Minn. Bids Jan. 11. CD 12/22.

James K. Leverett, 1212 Saving & Loan Bldg., Des Moines, Iowa, **Owner Builds, $500,000.** 47 DWELLINGS, vicinity of Hubbile Ave. and Gurthrie Ave., DES MOINES, IOWA.

George C. Deering, Inc., 6756 Chippewa St., St. Louis 9, Mo. Owner Builds. **$800,000.** 84 brick RESIDENCES, St. Catherine St. between U. S. No. 66 and Hy. 67-140, FLORISSANT, MO.

McKee Realty & Development Co., 8726 St. Charles Rock Rd., Overland 14, Mo. CA Est. **$500,000.** 100 addnl. frame RESIDENCES in Woodson Hills Sect. No. 3 subdivision, on Guthrie Ave. between Woodson and Edmundson Rds., OVERLAND (ST. LOUIS 14, P. O.), MO. McKee Homes, Inc., 8726 St. Charles Rock Rd., Overland 14, Mo.

▲† **Fruin-Colnon Contg. Co. & Utah Constr. Co.,** joint venturers, St. Louis Area Proj. Contr. AT-(40-1) 1966, P. O. Box 522, St. Charles, Mo. Own Forces. **$2,000,000.** LABORATORY (Sub-contract No. WS 22) for Atomic Energy Comn., WELDON SPRINGS, MO. Bids 12/15 rejected. CD 12/20, under LB.

Braselton Constr. Co., Box 4027, Corpus Christi, Tex. CA **$494,496.** JUNIOR HIGH SCHOOL, CORPUS CHRISTI, TEX. Corpus Christi Independent School Dist., 515 N. Carancahua St., Corpus Christi, Tex. Bids Jan. 9. CD 12/27.

DeWitt & Rearick, 500 N. Kansas St., El Paso, Tex. Own Forces. **$365,000,** 30 DWELLINGS; **$347,600,** 22 DWELLINGS, EL PASO, TEX. CD 10/20.

Bayou City Properties, c/o Glen Falls, Houston, Tex. Own Forces. **$347,910,** 8 masonry DWELLINGS, HOUSTON, TEX. CD 10/11.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

Davis & Butler, 422 Dooly Bldg., Salt Lake City, Utah. LB **$874,053,** Pumping Plant No. 2, OGDEN, UTAH. Weber Basin Conservancy Dist., E. J. Fjeldsted, 506 Kiesel Bldg., Ogden, Utah. Bids Jan. 10. CD 12/6.

ARIZONA—State Hy. Dpt., Phoenix,

Tiffany Constr. Co., P. O. Box 6346, Phoenix, Ariz., LB **$463,326,** est. $447,221 (10 bidders) grading, draining, furnishing, placing select material aggreg. base, bit. plant mix reconstr. 10 mi. US Rte 80, Yuma Co. IN 002-1 (1), Bids Jan. 10, awarded Jan. 30.

† **M. J. Brock & Son, Inc.,** 2894 Rowena Ave., Los Angeles, Calif., LB **$352,736,** est. $400,000. armament and electronics SHOP, ENG-04-353-56-55, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Jan. 11. CD 12/21.

BUILDINGS—LB & CA

Vandivort Constr. Co., Wenatchee, Wash., CA **$602,217,** general contract, 5 JUNIOR HIGH SCHOOL bldgs., WENATCHEE, WASH. School District 146, Wenatchee, Wash. Bids Dec. 6. CD 12/13, under LB.

Paul B. Emerick, 4540 S.E. 174 St., Portland, Ore., LB **$618,000** (5 bidders) JUNIOR HIGH SCHOOL, McMINNVILLE, ORE. McMinnville School Dist., McMinnville, Ore. Bids Jan. 16. CD 12/15.

R. W. Lunkenga Constr. Co., Box 943, Nampa, Idaho, LB **$425,777,** ELEMENTARY SCHOOL and HIGH SCHOOL addn. NYSSA, ORE. Nyssa School Dist., Nyssa, Ore. Graham Smith, Nyssa, Ore., archt.

▲ **William Simpson Constr. Co.,** 816 W. 5 St., Los Angeles, Calif., CA **$3,000,000.** 3 story, 143,880 sq. gt. OFFICE, EL SEGUNDO, CALIF. North American Aviation, Inc., 5601 W. Imperial Hy., Los Angeles, Calif. Austin, Field & Fry, 2311 W. 3 St., Kalionzes & Klingerman, 488 S. San Vicente St., Los Angeles, Calif., archts.-engrs.

De Lay Land Co., 7862 S. Western Ave., Los Angeles, Calif., CA **$997,500,** 105 frame, stucco DWELLINGS, Rancho Lane, Flores and Rockvale Sts., GLENDORA, CALIF. Dyke Land Co., 7862 S. Western Ave., Los Angeles, Calif.

▲† **William & Burrows,** 500 Harbor Blvd., Belmont, Calif., CA **$1,304,770,** 1 story, rein.-con. SUBSISTENCE BLDG. and MESS HALL and GALLEY, NOY 89349, Spec. 46697, SAN FRANCISCO, CALIF. Dist. P. Wks. Officer, Twelfth Naval Dist., San Bruno, Calif. Awarded Dec. 20.

Torrance Memorial Hospital, 1425 Engracia Ave., Torrance, Calif., rejected bids Dec. 14, HOSPITAL addn., TOR,-RANCE, CALIF. LB **$868,431.** CD 12/28, under LB.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **British Columbia Bridge & Dredging Co. Ltd.,** 544 Howe St., Vancouver, B. C., CA **$1,500,000.** replacing highway-railway bridge across Fraser River at MISSION CITY, B. C. Canadian Pacific Ry., R. E. Farmer, distr. engr. Quebec District, Windsor Station, Montreal, Que. Awarded Jan. 4.

ALASKA

HEAVY CONSTRUCTION—BA

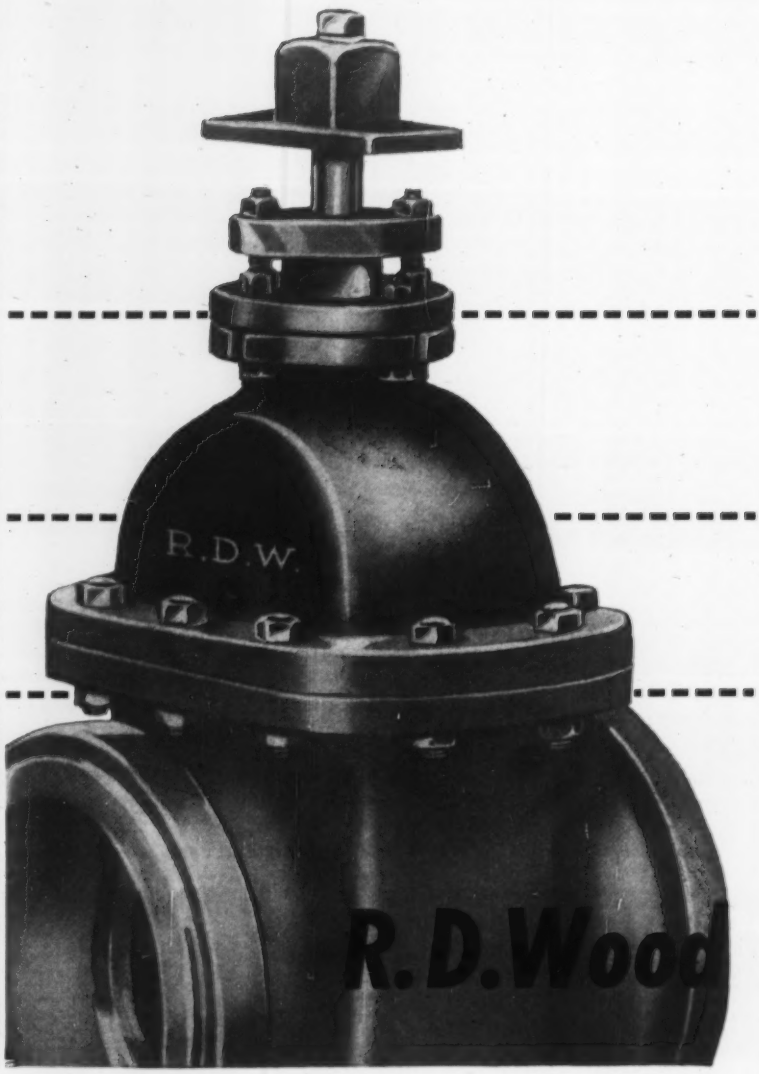
▲† **Alaska**—RUNWAY and TAXIWAY EXTENS.—BA 2/3—U. S. Eng., Anchorage, runway, taxiway extens., Elmendorf Air Force Base, Inv. 56-31. $7,187,846. Bids Dec. 28 rejected, LB **$8,915,267.** CD 12/30, under LB.

PUERTO RICO

HEAVY CONSTRUCTION—LB & CA

† **H. I. Hettinger Co.,** 8458 Fernandez Juncos Ave., Juncos Station, Santurce, Puerto Rico, CA **$577,500,**

Nobody wants to dig



squadron operations bldg., Ramey Air Force Base, ENG-08-123-56-32, AGUADILLA, PUERTO RICO, U. S. Eng., Box 4970, Jacksonville, Fla. Alexis B. Kononoff, 620 N. W. 32 St., Miami, Fla., archt.-engr. Bids Dec. 22. CD 11/15.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ark., Little Rock**—City, City Hall, reservoir, dam, pump station and pipe line on Big Maumelle River. $10,000,000. Max. A. Mehlburger, Pyramid Life Bldg., Little Rock, Kenneth W. LeFever, 401 Victory Blvd., Little Rock, and Malcolm Pirnie Engineers, 25 W. 43 St., New York, N. Y., consult. engrs. Bids on dam about July 1. CD 11/14.

▲ **Tex., Big Spring**—City, H. Whitney, mgr., City Hall, concrete and steel type water supply reservoir. $1,000,000. CD 7/5/51.

▲ **Tex., El Paso**—City, water sys. extens., imprvs. $4,500,000. CD 7/5/51.

SEWERS, WASTE DISPOSAL

▲ **Fla., Long Key**—Long Key Sewer District, primary treatment plant, 25 mi. sewers, 8 lift stations, $2,100,000. Russell & Axon, Municipal Airport, Daytona Beach, consult. engrs.

▲ **N. J., Trenton**—City, City Hall, sewage disposal plant addn. $4,000,000. Bogert-Childs Eng. Assocs., 624 Madison Ave., New York, N. Y., consult. engrs. CD 9/27.

▲ **O., Ashland**—City, City Hall, sewage treatment sys. $1,000,000.

▲ **O., Cleveland**—City, Dpt. P. Service, Louis L. Drasler, dir., City Hall, Zone 14, incinerator, Ridge Rd. near Clinton Ave. S.W. $1,500,000. Jay Katz, Div. of Eng. & Const., c/o owner, engr. CD 11/7/52.

▲ **Pa., Mount Joy**—Mount Joy Boro Auth., Boro Bldg., sewage treatment plant. $1,250,000. Joseph A. Michels, Dallastown, consult. engr.

▲ **Tex., El Paso**—City, sanitary sewerage sys. extens., imprvs. $3,700,000; storm sewers. $500,000. CD 12/17/54.

▲ **Ont., St. Catherines**—Grantham Twp., 145 King St., sanitary sewerage sys., trunk sewer line and sewage disposal plant. $2,000,000.

STREETS AND ROADS

▲ **FLORIDA**—Florida State Turnpike Auth., Dania, 279 mi. turnpike from Fort Pierce to Jacksonville. $155,400,000. Project approved. Will sell bonds. Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York, N. Y., consult. engrs. Coverdale & Colpitts, 120 Wall St., New York, N. Y., traffic engrs. CD 9/19/52.

▲ **Ill., Chicago**—City, City Hall, resurfacing 18 mi. Western Ave. $5,000,000.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Worcester—traffic circle Washington Square. $1,000,000. Universal Engineering Corp., 150 Causeway St., Boston, consult. engrs. Bids early Jan. 1956.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany,
Onondaga Co.—4-lane hy. from Nedron to Lafayette 4.9 mi. $2,152,316.
Lafayette to Tully, 4-lane hy. 6.53 mi., $2,540,000.

▲ **OHIO**—State Hy. Dpt., Columbus,
Clark Co.—1.7 mi. U. S. 40, $1,000,000, Alden E. Stilson & Assocs., 245 N. High St., Columbus, consult. engrs. Bids about Apr. 17, 1956. CD 7/2/54.
Hancock Co.—2.6 mi. U. S. 68, $1,000,000, H. W. Lochner & Co., 150 N. Wacker Dr., Chicago, Ill., consult. engrs., Bids about May 29, 1956.
Lorain Co.—3 mi. State Rte. 18, $1,700,000. Shaffer, Parrett & Assocs., 137 Lexington Ave., Mansfield, consult. engrs. Bids about May 1, 1956.
Medina Co.—4.3 mi. U. S. 42, $2,760,000, Stepleton, McDonnell & Barber, Colton Bldg., Toledo, consult. engrs. Bids about June 26, 1956.
Montgomery Co.—7 mi. U. S. 40, $4,150,000, Alden E. Stilson & Assocs., 245 N. High St., Columbus, consult. engrs. Bids about June 26, 1956. CD 7/2/54.
Richland Co.—3.4 mi. (second sect. Mansfield bypass) U. S. 30, $6,125,000, Vogt, Ivers, Seaman & Assocs., 34 W. 6 St., Cincinnati, consult. engrs., Bids about May 15, 1956.
Sandusky Co.—2.9 mi. State Rte. 12, $710,000. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago, Ill., consult. engrs. Bids about Apr. 17, 1956.
Summit Co.—9 mi. U. S. 21, $5,400,000, Charles E. DeLeuw, 150 N. Wacker Dr., Chicago, Ill., consult. engr., Bids about May 29, 1956.

EARTHWORK, WATERWAYS

▲ **Ontario**—Ontario Hydro-Electric Power Comn., 602 University Ave., Toronto, 200,000 kw. steam generating unit at Richard L. Hearn steam station. $32,000,000. Otto Holden, c/o owner, ch. engr.

▲ **Ontario**—Hydro-Electric Power Comn., 620 University Ave., Toronto, installing two 75,000 kw. units at Sir Adam Beck generating plant, Niagara Falls. $12,800,000. Otto Holden, c/o owner, ch. engr. CD 9/5/50.

AIRPORTS

▲ **Tex., El Paso**—AIRPORT—City, City Hall, airport imprvs., incl. runways, light and facilities at International Airport. $2,000,000. CD 1/26/55.

▲† **Alaska**—APRONS—U. S. Eng., Anchorage, rehabilitate aprons to serve 3 hangars. $1,500,000. Bids by June 30. CD 11/25/52.

LATIN AMERICA

▲ **CUBA**—National Development Comn., Havana,
165 mi. Pan American Hy. from Havana to LeFe. $1,718,000.

FOREIGN

▲ **Japan, Tokuyama**—Indemitsu Kosan Co., Tokyo, Japan, plans refinery. $14,500,000.

PUBLIC BUILDINGS

▲ **Calif., Covina**—HIGH SCHOOL—Covins Union High School Dist., Covina, plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, 122,000 sq. ft. West Covina High School, West Covina, $2,500,000. CD 4/11.

▲ **Ill., Great Lakes**—HOSPITAL—Ninth Naval Dist., Great Lakes, plans by Schmidt, Garden & Erickson, 104 S. Michigan Ave., Chicago, Zone 3, hospital, Great Lakes Naval Training Station. $2,500,000. CD 6/2.

▲† **La., Fort Polk**—HOUSING—Dpt. Defense, The Pentagon, Wash. 25, D. C., housing program incl. 2,000 units. $27,000,000.

▲† **La., New Orleans**—POST OFFICE, etc.—General Services Admin., Public Bldgs. Service, 19 and F Sts. N. W., Wash., D. C., plans by Freret & Wolf, 630 Gravier St. August Perez & Assoc., Audubon Bldg., and Favrot, Reed, Mathes & Bergman, Nola Bldg., post office and federal office bldg. under lease-purchase plan. $14,200,000. CD 12/6/49.

▲ **Mass., Athol**—SCHOOL—Town, J. Harold Moody, high school, $1,888,200.

▲ **Mass., Dracut**—SCHOOL—Town, Paul H. Phaneuf, supt. Schools, plans by Hugh Stubbins Assoc., 78 Mt. Auburn St., Cambridge, Junior Senior High School, Lakeview Ave. $2,000,000. CD 4/26/54.

▲ **Mich., Jackson**—SCHOOLS—City, Jackson Union School Dist., Dr. Ralph D. McLeary, supt. Schools, Junior High School, $5,000,000; Senior High School, $3,600,000; elementary schools, $2,500,000; improving existing schools, $2,500,000; Frost School addn., $800,000.

▲ **N. Y., Harrison**—SCHOOL—Bd. Educ., Harrison, plans by Robert P. Vignola & H. A. Tuttle, 217½ Harrison Ave., Junior-Senior High School addn. $2,000,000. Bids in June. CD 12/19.

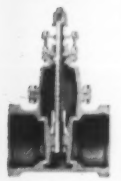
▲ **N. Y., Port Washington**—SCHOOL—Bd. Educ., Port Washington, $2,000,000 bond election Feb. 29,

(Continued on page 87)

up gate valves

Reliability is the important consideration in gate valves. They have got to work and *keep on working* even after years of idleness in the lines. Digging them up for repairs is too costly—as well as a possible fire or health hazard while they are out of operation.

Nobody Need Dig Up This Gate Valve
The R. D. Wood Gate Valve is designed for severe underground service. It can be counted on to do what is expected of it for scores of years.



Simple in Design
The Wood Gate Valve is reliable, because there's nothing to go wrong. It is rugged, fully bronze mounted, suitable for working pressures up to 175 pounds.

Only Three Moving Parts
Just a spreader and two discs—no small wedges or delicate parts.

Revolving Discs
One of the secrets of Wood gate valve reliability is that the discs are hung loosely. They are free to revolve their complete circumference while being raised or lowered. There's no dragging of the faces to cause wear at one point.

Uninterrupted Flow
The fully opened valve provides unobstructed passage. Gates are lifted entirely clear of the valve openings.

Available with mechanical joint pipe connections

Company Public Ledger Building, Independence Square
Philadelphia 5, Pa.

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First choice of men who know 6-wheel costs

Model RF-201, gasoline-powered 6-wheeler, 39,000 lbs. GVW and 65,000 lbs. GCW.

Now — *NEW* Gasoline, LPG and Diesels for a total of *101* models

SF-180 Series—GVW rating, 30,000-33,000 lbs. GCW, 45,000 pounds. Gasoline or LPG engines.

RF-200 Series—GVW, 37,000-41,000 lbs. GCW, 65,000 lbs. Royal Red Diamond 212-hp gasoline engine, optional.

RDF-210-H Series—GVW rating, 37,000-45,000 lbs. Diesel-powered. For highway or off-highway service.

RDF-214-H—GVW rating, 45,000 lbs. Diesel-powered. For heavy off-highway service.

RDF-230-H—GVW rating, 60,000 lbs. Diesel-powered. For heavy off-highway service.

DF-400 Series—GVW rating, 40,000 lbs. GCW rating, 76,800 lbs. Diesel-powered. For highway or off-highway service.

Here are 3 BIG reasons why:

1. **World's Widest Range of 6-wheel Models.** The INTERNATIONAL 6-wheel truck line offers trucks of every size and type from 22,000 to 90,000 pounds GVW—conventional and COE, gasoline, LPG and diesel—all available in hundreds of variations for *exact* matching to the requirements of every job.

2. **Custom-Built on the Production Line.** Years of experience in volume manufacture has created unmatched ability for pinpoint specialization in production line assembly. This means appreciable production savings, and is one of many superiorities that have made INTERNATIONAL the 6-wheel truck leader for 21 straight years.

3. **All-Truck Built to Save You the BIG Money.** INTERNATIONAL 6-wheel trucks are *all-truck* from the drawing board out with every component designed to do a truck job. They *last longer, work more dependably*—to save you the BIG money, the over-the-years operating and maintenance money.

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All-Truck Built to save you the BIG money!

INTERNATIONAL® TRUCKS

Motor Trucks • Crawler Tractors • Industrial Power

® McCormick® Farm Equipment and Farmall® Tractors

(Continued from page 85)

Morewood Oaks Junior High School on 15 acre tract between Sands Point and Cow Neck Rds. Eggers & Higgins, 100 E. 42 St., New York, Zone 17, archts.

▲ **N. Y., Riverhead**—OFFICE—Bd. Supervs., Suffolk Co., county office center, **$2,000,000.** Bids soon on first section.

▲ **O., Columbus**—SCHOOL—Dpt. P. Welfare, State Office Bldg., S. Front St., Columbus State School work. **$2,300,000.** CD 12/18/52.

▲ **O., Lebanon**—SECURITY INSTITUTION—Dpt. P. Welfare, State Office Bldg., S. Front St., Columbus, new medium security institution. First step of Southern Ohio Reformatory **$3,900,000** (1956). CD 3/17/52.

▲ **O., Sharonville**—HIGH SCHOOL—Princeton Local School Dist., 336 Reading Rd., plans by Potter, Tyler, Martin & Roth, 126 E. 6 St., Cincinnati, Junior and Senior High School, Sharon Ave. and Chester Rd. **$2,000,000.** Owners Staff Engr., c/o Robert Lucas, supt.

▲ **Pa., Embreeville**—HOSPITAL—General State Auth., 18 and Herr Sts., Harrisburg, plans by Clayton J. Lappley, Riverview Manor, Harrisburg, state hospital expansion, incl. new bldgs., utilities, site improvs., **$8,740,000,** McCormick-Taylor Assoc., 123 S. Broad St., Phila., struc. engrs. H. F. Lenz Co., 227 Franklin St., Johnston, consult. engr. CD 11/23.

▲ **Washington**—NUCLEAR-POWER REACTOR—State Power Comm., Olympia, 30,000 kw nuclear-power reactor using liquid metals to produce superheated steam, **$15,000,000.** J. F. Ward, c/o owner, mg. dir.

▲† **W. Va., Huntington**—FEDERAL OFFICE—General Services Admin., Public Bldgs., Wash., D. C., plans by S. E. Silling & Assocs., Masonic Temple, Charleston, federal office. **$3,300,000.** CD 2/10/50.

COMMERCIAL BUILDINGS

▲ **Ark., West Memphis**—SHOPPING CENTER—Decabra, Inc., 311 S. 2 St., Memphis, Tenn., plans by Windrom, Haglund & Venable, Hotel Chisca, Memphis, Tenn., shopping center, 19-arce L-shaped tract on Hy. 70 with off-street parking, **$2,300,000.** CD 10/20/54.

▲ **Calif., Alameda**—SHOPPING CENTER—John A. Raghianti, 330 Telegraph Ave., Oakland, plans by John B. Anthony, 1610 Harrison St., Oakland, shopping center, 100,000 sq. ft. parking area, Pacific Ave. **$4,000,000.**

▲ **Calif., Apple Valley**—PLANT—Permanente Cement Corp., 1924 Broadway, Oakland, cement plant at Cushenbury, **$12,000,000.**

▲ **Conn., New Haven**—SCHOOL—Yale Divinity School, New Haven, plans by Douglas Orr, 111 Whitney St., 7 buildings, incl. dormitories, and masters house, on campus. **$2,750,000.**

▲ **Neb., Omaha**—HOTEL—Schimmel Hotel Co., 26th and Farnam Sts., Blackstone Hotel addn. **$2,000,000.** L. A. Daly Co., Insurance Bldg., consult. engr.

▲ **N. Y., New York**—OFFICE—Sam Minskoff & Sons, Inc., 521 Fifth Ave., Zone 17, 30 story office Lexington Ave. and 51 St., **$3,000,000.**

▲ **N. Y., New York**—APARTMENT—Simon Brothers, 477 Madison Ave., Zone 22, apartment on east block-front of Second Ave. from 86 to 87 Sts. at 1660-1680 Second Ave. **$2,000,000.**

▲ **N. Y., New York**—HALL and MERCHANDISE MART, etc.—Webb & Knapp, Inc., 270 Park Ave., Zone 17, Great Hall, merchandise mart, exhibit bldg., television studios, hotel, 1,750 ft. Freedom Tower, heliport, and parking, **$300,000,000-$500,000,000.** Plan replaces Palace of Progress over Penn. Station. CD 7/1.

▲ **N. Y., Niagara Falls**—HOTEL—Niagara Frontier Properties, Inc., Philip Gellman, vice pres. and atty., Niagara Falls, 2 story hotel on 4 acre site opposite old Shredded Wheat Plant, on Buffalo Ave. **$2,000,000.**

▲ **O., Centerville**—SEMINARY—Province of Franciscan Order, 1615 Vine St., Cincinnati, plans by Brother Cajetan Baumann, 44 Whitehall St., New York, N. Y. 2 and 3 story, brick seminary to be known as St. Leonard College, 245-acre tract, Clyo and Centerville Station Rds. **$3,000,000.** Work to start about Mar. 1. CD 3/11/53.

▲ **O., Cleveland**—OFFICE—The Pennsylvania R. R., (Central Region) D. L. Sommerville, ch. engr., Penna. Station, Pittsburgh 22, Pa., office bldg., E. 55 and Euclid Aves. to house Cleveland District Offices. **$4,000,000-$5,000,000.**

▲ **O., Lorain**—HOMES—Clem J. Rice, 5021 Leavitt Rd., Amherst, 300 homes. **$5,000,000.** 3-5 year program. Start in April.

▲ **Pa., Upper Darby**—DEPARTMENT STORE—Gimbel Bros., Inc., Eighth and Market Sts., Phila., plans by Lathrop Douglass, 518 Fifth Ave., New York, N. Y., department store, parketeria, 69 St. and Walnut Sts. **$10,000,000.** Constr. in Spring.

▲ **Tex., Dallas**—HOTEL—Sheraton Hotel, c/o Southland Life Insurance Bldg., Dallas, Tex., 28 story, 600-room hotel in Southland Center. **$12,000,000.** CD 6/27/50.

▲ **Tex., Houston**—APARTMENTS—S. N. Adams, c/o Highland Village Shopping Center, 4000 Westheimer St., No. 1, 15 story apartment, **$3,000,000;** No. 2, 15 story apartment, **$3,250,000,** adjacent to Highland Village, 14-acre site.

▲ **Tex., Houston**—TECHNICAL and BUSINESS CENTER—J. P. Boone, Builder, 4320 Alief Rd., plans by Lucian T. Hood, 2317 Bissonnet St., technical and business center, 15-acre tract, Richmond near Post Oak Rd. **$5,000,000.**

▲ **Va., Fairfax**—SHOPPING CENTER—Ajax Constr. Co., 1107 19th St. N. W., Wash., D. C., regional shopping center, Layton Hall. **$4,500,000.** Constr. probably spring 1956.

▲ **Wash., Spokane**—HOUSING—Guthrie Constr. Co., N2918 Nevada St., 150 houses, Spokane Valley between Sprague and Valley Way from Holiday Rd. to Family Dr. **$2,500,000.** CD 5/19.

▲ **Alta., Edmonton**—HOUSING—Can-Alta Constr. Co. Ltd., 10128 138th St., plans by Blakey, Blakey & Ascher, 10042, 109th St., 200 houses in northwestern sect. of city. **$2,000,000.** Work to start in spring.

▲ **Que., Nicolet**—HOME FOR AGED—Soeurs Grises Maison Meres, 1190 Guy St., Montreal, 5 story home for the aged, **$2,000,000.**

INDUSTRIAL BUILDINGS

▲ **Ala., Listerhill**—PLANT—Reynolds Metals Co., Reynolds Metals Bldg., Richmond 19, Va., plant addn. and production facilities at plant here, **$80,000,000.** CD 8/9.

▲ **Calif., San Francisco**—GARAGE—Fairfax—Services, Inc. and Webb & Knapp, 383 Madison Ave., New York 17, N. Y., 12 story, 900-car garage with stores and offices on lower floors. **$4,000,000.**

▲ **Calif., San Jose**—PLANT EXPANSION—International Business Machines Corp., 25 Battery St., San Francisco, plans by John S. Bolles, 215 Leidesdorff St., San Francisco, plant expansion incl. mfg. engineering and educational facilities, 190-acre site, est. **$4,000,000.** Keller & Gannon, Lyle Patton, H. W. Eggleston, and Chase, Chin & Karp, Crocker First National Bank Bldg., San Francisco, engrs. CD 9/8.

▲ **Ky., Louisville**—PLANT—Ewing-Von Allmen Dairy Co. (National Dairy Products Co.), 431 W. Oak St., 1 story dairy plant in suburban area, **$1,000,000-$2,000,000.** Scheduled for completion 1958.

▲ **Mo., Kansas City**—SERVICE—Kansas City Power & Light Co., 14 and Baltimore St., Kansas City, Mo., service bldg., incl. 2 story, 184,000 sq. ft. brick bldg., 17,000 sq. ft. garage, on 50 acre tract on Manchester Trafficway at Front St. near south of Chouteau Bridge, North Kansas City, **$6,000,000.** Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., consult. engr.

▲ **N. Y., Arcade**—PLANT—Motorola, Inc., Arcade, plant addn. to build pushbutton transmission assemblies for Chrysler products. **$1,000,000.** Constr. in the Spring.

▲ **N. Y., New York**—FREIGHT TERMINAL—Baltimore & Ohio R.R. Co., 2 Wall St., New York, Zone 5, railroad freight terminal on Hudson River, at W. 23 St. **$1,000,000.** Bids in Spring.

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▲ **Tenn., Chattanooga**—PLANT—Combustion Engineering, Inc., 911 W. Main St., plans by Stone & Webster Eng. Corp., 49 Federal St., Boston, Mass., addn. of "heavy" reactor nuclear equip. and bldgs., installation of 15 million volt betatron for X-raying thick plate and welds, large precision machine tools and cranes to handle loads in excess of 300 tons; dock equip. to handle reactor vessels to large and heavy for rail or highway equip. $2,000,000.

▲ **Texas**—BARGE TERMINAL, etc.—Tennessee Gas Transmission Co., Commerce Bldg., Houston, barge terminal, $1,000,000; gas separating plant, $1,000,000, near LaPorte.

▲ **Tex., Houston**—ELECTRIC PLANT—Houston Lighting & Power Co., 1016 Walker St., constr. 2nd electric plant generating unit at Sam Bertron plant, $12,000,000; 132-kv steel tower line between Webster Plant and West Galveston sub-station, $300,000; constr. 132-kv electric power line from Webster area to Angleton area, $500,000. CD 3/25/53.

▲ **Tex., Midland**—PLANT—El Paso Natural Gas Co., Bassett Tower, El Paso, Midkiff gasoline plant expansion, $1,000,000; some gas lines in vicinity Midkiff plant, $250,000.

▲ **B. C., Vancouver**—COPPER MILL—Western Copper Mills Ltd., c/o 1070 Hornby St., copper mill in Greater Vancouver area, $3,500,000. B. D. Bohna & Co. Ltd., 1070 Hornby St., consult. engrs.

UNCLASSIFIED

▲ **Calif., San Francisco**—SUBWAY SYSTEM—San Francisco Bay Area Rapid Transit Comm., 1182 Market St., subway system, incl. 400 mile track, stations, under water bay tube, altering Golden Gate Bridge for trains, constr. parallel bridge to San Rafael Bridge. $1,500,000,000. Parsons, Brinckerhoff, Hall & Macdonald, 52 Broadway, New York 6, N. Y., completed preliminary survey. CD 2/7/52.

▲ **Idaho-Washington**—RURAL DISTRIBUTION LINES, etc.—Washington Water Power Co., W. 825 Trent St., Spokane, Wash., rural line extens., $92,000; new distribution facilities, $200,000, improved distr. facilities, $2,000,000, modernize Long Lake, Upper Falls and Lewiston generating plants, $100,000, Idaho and Washington, Work to be carried out this year; 111 mi. 230-volt transmission line from Spokane, Wash. to Lewiston, Idaho, $3,200,000, Work to begin this year; new sub-stations at Wilbur, Othello, Kettle Falls, Wash., Bovill and Lake View, Idaho, imprv. 19 sub-stations, $1,000,000. Work to be carried out this year; rehabilitate generating plant with new transformers and circuit breakers, Post Falls, Idaho, $229,700, Work to begin this year.

▲ **Louisiana**—RURAL DISTRIBUTION LINES—Louisiana Rural Electric Corp., Alexandria, 388 mi. rural distr. lines, 156 mi. 34.5 KV transmission lines, 7 new sub-stations, 5ys. imprvs., Rapides Parish. $1,565,000. CD 8/7/52.

▲ **Mass., Boston**—OFF STREET PARKING—City, Real Estate Comm., City Hall Annex, plans by M. A. Dyer Co., 24 School St., off-street parking facility, Central, Kilby, Broad & Water Sts. $1,450,000.

▲ **Mass., Dorchester**—TELEVISION STUDIO—Greater Boston Television Corp., 31 Milk St., Boston, plans by W. Chester Browne & Assoc., 184 Boylston St., Boston, 150x150 ft. Television Studio WGBT, Mt. Vernon St. $1,000,000.

▲ **Mich., Royal Oak**—RECREATION FACILITIES—City, Gladys Holmes, city engr., 211 Williams St., recreation facilities, 4 swimming pools, 4 artificial ice skating rinks, 4 lighted baseball diamonds, tennis courts, community bldg. with gymnasium. $1,000,000. George L. Napa, city engr.

▲ **New Mexico**—GAS LINES—El Paso Natural Gas Co., Bassett Tower, El Paso, Tex., laying 300 mi. 34 in. loop lines from San Juan Basin to Colorado River at Arizona-California border. $28,500,000. CD 7/24/52.

▲ **N. Y., Buffalo**—BROADCASTING STATION—National Broadcasting Co., 30 Rockefeller Plaza, New York, broadcasting station, transmitter, color TV on 3 acre plot, at 2077 Elmwood Ave. $1,000,000.

▲ **O., Macedonia**—SPUR TRACK—Pennsylvania R. R., (Central Region) D. L. Sommerville, ch engr., Penna. Station, Pittsburgh 22, Pa., 3 mi. spur track to service new Chrysler plant, incl. 8 tracks directly behind the plant for switching and storage. $1,000,000.

▲ **South Dakota**—RURAL DISTRIBUTION LINES—Black Hills Power & Light Co., 621 6th St., Rapid City, sys. expansion, incl. transmission lines, distr. lines, sub-stations and equip., Rapid City. $2,500,000.

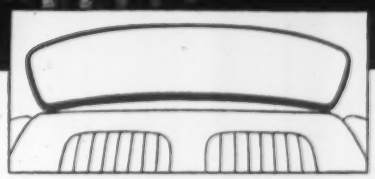
▲ **Texas-Oklahoma**—GAS LINES—Lone Star Gas Co., 301 S. Harwood St., Dallas, Tex., 230 mi. gas line from point in Cotton Co., Okla., to Fritch, Tex., $18,000,000; 205 mi. gas line from Snyder, Tex. to hook up with Cotton-Fritch line near Fritch, Tex., $15,000,000. CD 3/24.

▲ **Texas**—PRODUCTS LINE—Phillips Pipe Line Co., Sweeny, 64 mi. 12 in. products line, Sweeny to Houston. $1,280,000.

▲ **Texas**—GAS LINES—Texas Eastern Transmission Corp., Texas Eastern Bldg., Shreveport, La., 422 mi. 30 in. gas trunk line from McAllen to Beaumont, $67,500,000; 45 mi 24 in. gas line from Provident City to point in Matagorda Co. $1,350,000.

▲ **Texas**—GAS LINES—Trunkline Gas Co., 5650 Kirby St., Houston, natural gas gathering line-facilities, along Gulf Coast area, $1,000,000.

▲ **Alberta**—GAS PIPE LINE—Midwestern Industrial Gas Ltd., 108 Thomson Bldg., Edmonton, 32 mi. 20 in. diam. gas pipe line from Alexander Field to Lake Wabamun, Fort Saskatchewan. $1,250,000.



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NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
February 6 Connecticut

▲† **Massachusetts**—BA On Or About 2/16—U. S. Eng., 111 E. 16 St., New York 3, N. Y., Hoosic River Basin, Adams Flood Control Proj. Unit No. 5, Adams, CIVENG-30-075-56-6. $1,500,000-$2,000,000. Plans deposit $25. CD 8/19.

HEAVY CONSTRUCTION—LB & CA

▲ **CONNECTICUT**—State Hy. Dpt., State Office Bldg., Hartford,
Conn.—**A. S. Wikstrom, Inc.**, Mottville, Skaneateles, N. Y., LB, $5,726,917. Proj. 311-01 sub-structure, Bridgeport Harbor Bridge, Bridgeport;
Conn.—**Terry Contg., Inc.**, 31 E. 27 St., New York, N. Y., LB, $6,390,107, Proj. 311-02, superstructure, Bridgeport Harbor Bridge, Bridgeport. Bids Jan. 16. CD 1/5.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
February 10 Pennsylvania
STREETS AND ROADS
February 10 Pennsylvania

▲ **N. Y., Brooklyn**—BA 2/7—President Brooklyn Boro, Boro Hall, combined replacement relief sewer in Autumn Ave. from Pitkin to Sutter Aves., incl. new siphon chamber; combined sewer in Autumn Ave. from Sutter to Fairfield Aves., grading in Autumn Ave. from Fairfield to Wortman Aves., from Stanley to Loring Aves. and from Linden Blvd. to Blake Ave.; and regrading Autumn Ave. from Wortman to Stanley Aves. CD 6/13/55.

▲† **New York**—BA 3/6—U. S. Eng., Niagara and Bridge Sts., Buffalo, Zone 7, Grass River Lock to be built in 10-mile long Sault Canal, St. Lawrence Seaway. CD 12/6.

HEAVY CONSTRUCTION—LB & CA

▲† **Morrison-Knudsen Co., Inc., Walsh Constr. Co.**, and **Perini-Quebec**, 122 E. 42 St., New York, N. Y. LB $20,172,451 (joint venture) (6 bidders) constr. Robinson Bay Lock 3½ mi. northeast of Massena, NEW YORK. U. S. Eng., Engineer Park, Niagara and Bridge Sts., Buffalo 7, N. Y. CD 9/27.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comm., 11 N. Fourth St., Harrisburg,
George M. Brewster & Son, Inc., 275 W. Fort Lee Rd., Bogota, N. J. LB $3,722,873. constr. 3.54 mi. (Sec. 37 J), northeastern extension in Pittston Twp., Luzerne Co. and Moosic Boro, Lackawanna Co. Bids Jan. 17. CD 12/14.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,
Lycoming Constr. Co., Inc., 127 Susquehanna St., Williamsport, Pa. CA $4,395,258. divided hy., 2 rein.-con. bridges, pipe culvert, three I-beam bridges, ramps and service roads impry. 8.33 mi. Traffic Rte. 31, between Rostraver and Wyano, Westmoreland Co. CD 1/5, under LB.

▲ **Dravo Corp.**, Neville Island, Pittsburgh, Pa. CA $10,565,500. (7 bidders) Contr. 49, 6 mi. intercepting sewer 48-to 72-in. in diam.; CA $8,172,500 (8 bidders) Contr. 46, 3 mi. intercepting sewer 54-to 125-in. diam., PITTSBURGH, PA. Allegheny County Sanitary Auth., 701 Civic Bldg., 200 Ross St., Pittsburgh 19, Pa. Grand total $24,632,957;
Harrison Constr. Co., 1101 Western Ave., Pittsburgh 33, Pa. CA $4,229,951. (8 bidders) Contr. 47, 3 mi. intercepting sewer 36-to 60-in.; CA $1,065,095 (4 bidders) Contr. 48, 2 mi. intercepting sewers 12-to 30-in. (Pittsburgh, Pa.);
Ben Constr. Co. & Allegheny Contg. Co., 101 Hargrove St., Pittsburgh 26, Pa. CA $599,911 (5 bidders) Contr. 64, intercepting sewer for Verona Proj., incl. sub-aqueous river crossing, (Pittsburgh, Pa.).

▲ **James McHugh Constr. Co.**, 6449 S. South Park, Chicago, Ill. CA $2,836,038. Contr. 40, superstructure sewage treatment plant; CA $4,942,114. Contr. 34, sewage substructure treatment plant, PITTSBURGH, PA. Allegheny County Sanitary Auth., 701 Civic Bldg., 200 Ross St., Pittsburgh 19, Pa. Grand total $14,750,106. Bids Dec. 20, CD 10/24;
Wayne Crouse, Inc., 245 N. Neville St., Pittsburgh, Pa. CA $2,518,544. Contr. 36, mechanical equip. and process piping (Pittsburgh, Pa.);
Combustion Engineering Co., First National Bldg., Pittsburgh, Pa. CA $3,593,000. Contr. 38, sludge incineration equipment, (Pittsburgh, Pa.);
Allegheny Contg. Industries, 801 Bingham St., Pittsburgh, Pa. CA $719,500. Contr. 44, fencing, railroad, tracks, chlorine unloading facilities, roading, grading, walks, exterior pipe lines, etc. (Pittsburgh, Pa.);
Dravo Corp., Neville Island, Pittsburgh, Pa. CA $168,350. Contr. 37, River wall at sewage plant, (Pittsburgh, Pa.);
Worthington Corp., Koppers Bldg., Pittsburgh, Pa. CA $380,210. Contr. 35, pumps, motors, switchgear, sewage treatment plant, (Pittsburgh, Pa.);
Sauer, Inc., 2701 East St., Pittsburgh, Pa. CA $147,150. Contr. 42, plumbing for sewage treatment plant; CA $445,200. Contr. 43, heating and ventilating sewage plant, (Pittsburgh, Pa.).

▲ **Jos. Miele Constr. Co., Inc.**, Rte. 17, Wood Ridge, N. J. CA $1,965,350. Contr. 28, Ohio River Interceptor; CA $1,139,162. Contr. 31, Chartier Creek Interceptor, Scully and Bridgeville Tunnels; CA $3,552,590. Contr. 45, Ohio River Interceptor; CA $4,233,980. Contr. 51 Monongahela River Interceptor; CA $5,889,000. Contr. 52, Monongahela River Interceptor. CA $2,840,100. Contr. 53, Turtle Creek Interceptor, PITTSBURGH, PA. Allegheny County Sanitary Auth., 200 Ross St., Pittsburgh 19, Pa. Grand total $36,761,735. Bids Dec. 20. CD 12/15 and 10/24.
B. Perini & Sons, Inc., West St., Framingham, Mass. CA $12,249,000. Contr. 50, Monongahela River Interceptor, (Pittsburgh, Pa.);
Intercounty Constr. Co., Hyattsville, Md. CA $1,120,000. Contr. 30, Chartier Creek Interceptor (Pittsburgh, Pa.);
Ben Constr. Co., 101 Hargrove St., Pittsburgh, Pa. CA $1,108,686. Contr. 32, Chartiers Creek Interceptor at Carnegie; CA $1,295,941. Contr. 33, Chartiers Creek Interceptor at Bridgeville (Pittsburgh, Pa.);
United Foundation Corp., Union, N. J. CA $1,060,971. Contr. 54, Turtle Creek Interceptor (Pittsburgh, Pa.).
Harrison Constr. Co., 1101 Western Ave., Pittsburgh, Pa. CA $306,955. Contr. 29, Ohio River Interceptor (Pittsburgh, Pa.).

BUILDINGS—LB & CA

▲ **Waterbury Farrel Foundry & Machine Co.**, Wilcox and Daniel Sts., Waterbury 20, Conn. EA Est. $2,500,000. Senzimir MILL for cold rolling stainless and titanium strip, MIDLAND, PA. Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. Mill purchased from Armzen Co., Senzimir Bldg., Waterbury, Conn. CD 1/19.

▲ **James Scully**, 6722 N. Broad St., Phila., Pa. Separate Contracts. $1,800,000. RESIDENTIAL DEVELOPMENT, 133 units, North Wales Rd. area, NORRISTOWN, PA.

▲ **Hyman Korman, Inc.**, 6401 Castor Ave., Phila., Pa. Separate Contracts. Est. $5,000,000. RESIDENTIAL DEVELOPMENT, Calvert St., PHILA., PA.

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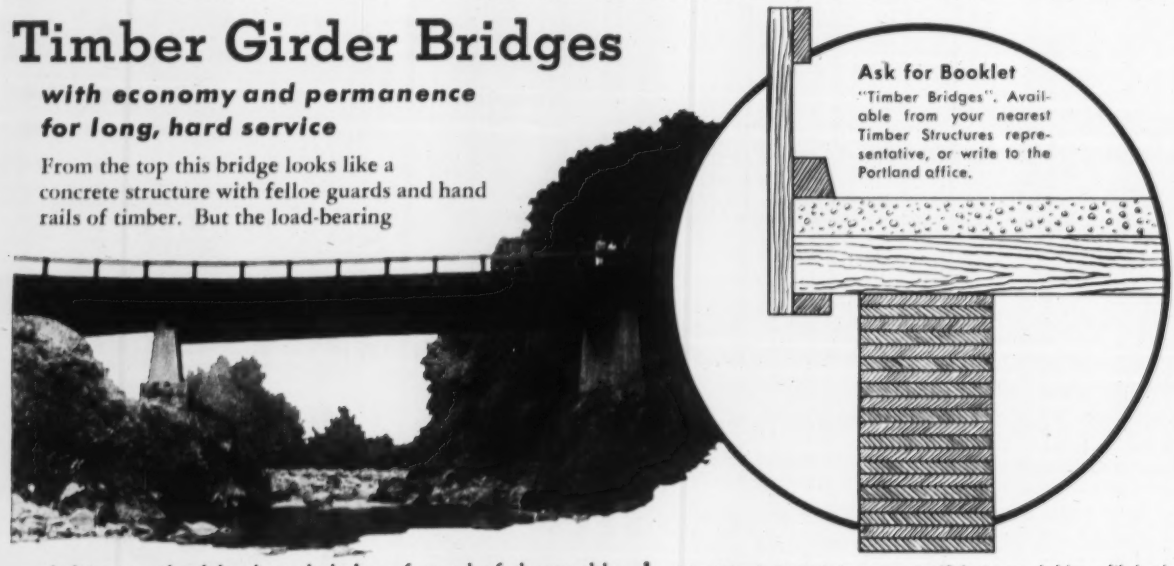
with economy and permanence for long, hard service

From the top this bridge looks like a concrete structure with felloe guards and hand rails of timber. But the load-bearing



girders are glued laminated timbers formed of thoroughly seasoned structural Douglas Fir material welded together permanently by waterproof glues. "Factory grown" to the size and shape prescribed by engineering detail, girders are pressure treated with approved preservatives to insure decades of usefulness.

Roadway may be of reinforced concrete slab or other standard road surfacing material supported on treated timber deck, with no falsework required. The resulting structure is unrestricted by limitations of any one material, each instead being used so that it contributes only its best qualities.

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Glued laminated girders support 60-foot span bridge with laminated 2"x10" timber deck and concrete roadway. Rail and felloe guard are timber, clean treated and painted for high visibility.

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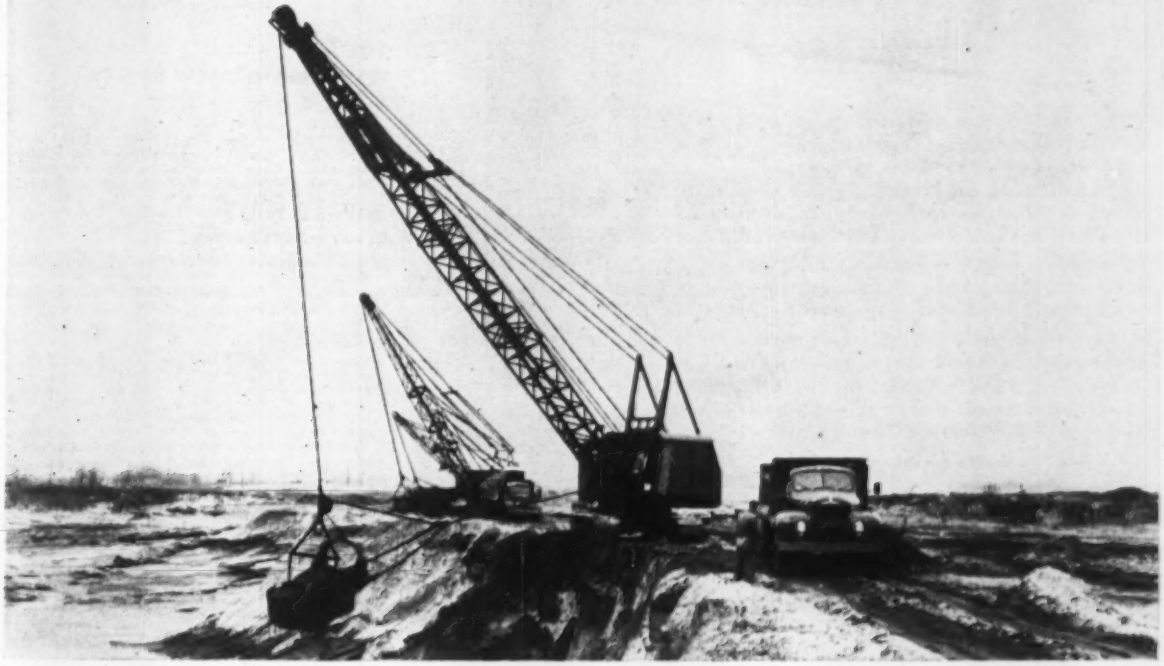

New VHS Dragline Gives 33% More Wear

Mr. W. D. Tierney, of Tierney Bros., Contractors of Lockport, Illinois, says: "The draglines on our 3500 Manitowoc lead a rough life. Therefore, when our distributor told us about the possibility of increased service with new TRU-LAY VHS draglines we decided to give it a chance.

This new dragline lived up to all the claims made for it. It lasted over four months under a variety of operating conditions—working in sand, gravel, earth and slag. We estimate that we got at least one-third more service from this dragline than we had been able to obtain before. And we particularly like the pre-lubricated feature."

VHS draglines are setting records like these on construction projects all over the country. They are made from a new grade of steel for wire rope—and are at least 15% stronger than Improved Plow Steel—the best grade available until now.

For Heavier Loads, Higher Safety Factor

TRU-LAY VHS's extra strength enables you to handle heavier loads with the same diameter line. And it gives a higher factor of safety for the entire service life of the rope.

For Shovel Hoist Ropes and Scraper Cables Too

TRU-LAY VHS was developed especially for the toughest applications in the construction field—draglines, shovel hoist ropes and scraper cables. In addition to greater strength, it is also tougher—more wear resistant. And it has all the advantages of preformed construction. This means that it lasts longer in the roughest construction services.

Cuts Down Time—Saves Money

Because it is tougher and more wear resistant, TRU-LAY VHS rope lasts longer, costs less to use and cuts "down time" of equipment for wire rope replacement.

TRU-LAY VHS ropes are easy to order. Just ask for TRU-LAY VHS Shovel Hoist Ropes, Scraper Ropes or draglines, in the size you want. You don't need any complicated specifications.

Your American Cable Distributor has TRU-LAY VHS *in stock now. See him or write to the nearest American Chain & Cable Company Office.*

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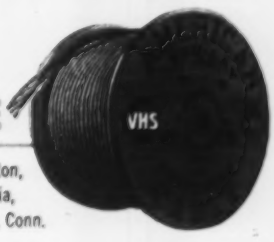

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DRILLING CONTRACTORS AND MFRS.
PITTSBURGH 20, PA.

(Continued from page 90)

▲ **Consolidated Eng. Co.**, 20 E. Franklin St., Baltimore 2, Md. CA $5,000,000. 1 and 2 story, 680x880x41 ft., masonry MANUFACTURING BLDG. and OFFICE, BALTIMORE, MD. Western Electric Co., 2500 Broening Hy., Baltimore, Md.

▲ **Austin Co.**, 16112 Euclid St., Cleveland, O. CA Est. $1,800,000. design and constr. 1 and 3 story, 300x600 ft., rein.-con., steel, concrete block MANUFACTURING BLDG., HAMPSTEAD, MD. Black & Decker Mfg. Co., Towson 4, Md.

▲ **Gunnell Constr. Co., Inc.**, Tower Bldg., Wash., D. C., CA, $2,007,000 Base Bid, Alternate 1 and 4, PSYCHIATRIC BLDG., D. C. General Hospital, WASH, D. C. D. C. Govt., 499 Pennsylvania Ave. N. W., Wash., D. C. Bids Jan. 12, awarded Jan. 16. CD 1/16, under LB

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **McWilliams Dredging Co.**, 903 S. Jefferson Davis Parkway, New Orleans, La. LB $3,037,560. (2 bidders) installing hydraulic levee fill beginning at South point running southerly to junction with Intracoastal Canal thence to Michoud, NEW ORLEANS, LA. Bd. Levee Comn., 200 Civil Courts Bldg., New Orleans, La. Bids Jan. 10.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Cincinnati**—BA 1/31—City, City Hall, east branch of Ohio River Interceptor, Sect. No. 1 and McLean Ave. Interceptor connection. $1,500,000. Plans deposit $10. T. J. Montgomery, city engr. CD 4/1.

BUILDINGS—BA

▲ **Mich., Ann Arbor**—FOOD SERVICE—BA 2/21—Regents of University of Michigan, W. K. Pierpont, vice pres., Plant Service Bldg., Proj. No. 44-3, remodeling food service bldg. university hospital, addns. with shafts and penthouses, alterations to existing areas. Plans deposit $150. Lee Black & Kenneth C. Black, 706 Capitol Savings & Loan Bldg., Lansing, Zone 68, archts. CD 11/3/52.

HEAVY CONSTRUCTION—LB & CA

▲ **Hunkin Conkey Co.**, 1740 E. 12 St., Cleveland 14, O. LB $3,824,706. (4 bidders) administration and chemical bldg., filters, filter bldg., rapid mix tanks for Clague Rd. Filtration plant, CLEVELAND, O. City, Dpt. P. Utilities, Frank J. Schwemler, comr., City Hall, Cleveland 14, O. Bids Jan. 13. CD 12/27;
Doan Electric Co., 725 Hamilton St., Cleveland 14, O. LB $143,370. (3 bidders) electrical work Clague Rd. filtration plant work (Cleveland, O.).
Spohn Heating & Ventilating Co., 1745 E. 45 St., Cleveland 3, O. LB $37,990. (3 bidders) heating and ventilating work (Cleveland, O.).

BUILDINGS—LB & CA

▲ **John Jacobson Co.**, 1046 N. Main St., Akron, O. CA est. $2,500,000-$3,000,000. 3 story, 125x400 ft. RESEARCH and ENGINEERING BLDG., AKRON, O. Goodyear Aircraft Corp., 1144 Market St., Akron, O. CD 6/17.

▲ **Holscher & Rape**, Ohio and Gatewood Aves., Cincinnati, O. Own Forces. $1,800,000. approx. 100 brick HOMES on new streets off Galbraith Rd., east of Montgomery Rd., CINCINNATI, O. Nunlist & Frolicher, Traction Bldg., Cincinnati, O., engrs.

▲ **Wood Realty Co.**, Carew Tower, Cincinnati, O. Own Forces. $2,500,000. RESIDENCES, 40-acre tract, Cormley and Clough Rds., CINCINNATI, O. Ayers & Graf, 527 Linton St., Cincinnati, O., engrs. Awarded Jan. 7.

▲ **Craft Builders**, 18032 Euclid Ave., Cleveland 12, O. Own Forces. $4,500,000. 280 HOMES, W. 121 St. and Pleasant Valley Rds., PARMA, O. Louis J. Rotman, 31715 Vine St., Wickliffe, O., archt. Awarded Jan. 16. CD 9/15.

▲ **Sumner Sollitt Co.**, 307 N. Michigan St., Chicago 1, Ill., LB, $10,617,000. Frances Cabrini Extension, Phase II, incl. two 7 story APARTMENTS; three 10 story APARTMENTS; two 19 story APARTMENTS, 1 story COMMUNITY BLDG. CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago 5, Ill. CD 5/21/53.

▲ **Campbell Lowrie & Lautermilch Corp.**, 400 W. Madison St., Chicago 6, Ill., CA, $1,500,000. PLANT and BOILER ROOM on premises LIBERTYVILLE, ILL. Frank Hough Co., 7 St., Libertyville, Ill. E. O. Sessions Co., 1 N. La Salle St., Chicago, Zone 2, engr. Awarded Nov. 1.

▲ **Zemon Constr. Co.**, 3316 N. Harlem St., Chicago, Ill., CA, $2,000,000. SHOPPING CENTER, incl. 30-units, WAUKEGAN, ILL. Cain & Culhane, 4545 N. Broadway, Chicago, Ill. Awarded Jan. 10. CD 12/30/54.

▲ **J. M. Rosenburg & Sam Rubinstein**, 19211 Birwood St., Detroit 21, Mich. Owner Builds. $2,000,000. Veneer brick terrace APARTMENTS, 243 units, Ten Mile Rd. and Greenfield St., OAK PARK, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
February 2, 3, Kansas

STREETS AND ROADS
February 2, 3, Kansas

BUILDINGS—BA

▲ **Minn., Bloomington**—SCHOOL—BA 2/29—Bd. Educ., A. Moir, clk., high school between West 88 and 90 Sts. and between Queen and Thomas' Aves. $3,000,000. Plans deposit $50, Armstrong & Schlichting, 2722 Park Ave., Minneapolis, archts.

HEAVY CONSTRUCTION—LB & CA

▲† **T. C. Bateson Constr. Co.**, 6800 Denton Dr., Dallas, Tex. LB **$2,913,700**, est. $3,077,180. 3 story, partial bsmnt. hospital, Forbes Air Force Base, Inv. 56-36, TOPEKA, KAN. U. S. Eng., Federal Office Bldg., Kansas City, Mo. Bids Jan. 12. CD 12/29.

BUILDINGS—LB & CA

▲ **Melvin H. Glick & Son.**, 44 N. Brentwood Blvd., Clayton 5, Mo. Owner Builds. **$4,000,000.** 1 story, brick, steel SHOPPING CENTER, incl. 30 stores, parking area, etc., south side Olive Street Rd., east of Bonhomme Rd.; **$2,000,000.** 200 full bsmnts. RESIDENCES, 197 acre tract adjacent to 9500 Olive Street Rd. in Indian Meadows subdivision OLIVETTE (ST. LOUIS 14 P. O.), MO. Isadore Shank, 8135 Forsyth Blvd., Clayton 24, Mo., archt. A. L. Munson & Assoc., 20 S. Gore Ave., Webster Groves 19, Mo., mech. engrs.

▲ **Schneider Constr. Co.**, Box 13157, Houston, Tex., LB **$1,944,286** South and West Hall Men's DORMITORY, HOUSTON, TEX. Rice Institute, 6100 Main St., Houston, Tex. Bids Jan. 6. CD 12/14.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
February 15 California March 1 Oregon-Washington
STREETS AND ROADS
February 15, 16 California

BUILDINGS—BA

▲† **Ariz., Fort Huachuca**—HOUSING—BA 2/2—U. S. Eng., 751 Figueroa St., Los Angeles, Calif. army family housing, ENG-04-353-56-82, $3,000,000. CD 10/3.

▲ **Calif., Los Angeles**—SECURITY UNIT—BA 2/8—Los Angeles Co., Hall of Records, Maximum Security Unit addns., alterations, Wayside Honor Rancho, Castaic. **$1,646,400.** CD 1/18.

HEAVY CONSTRUCTION—LB & CA

▲† **R. V. Lloyd & Co.**, Box 391, Coachella, Calif., LB, **$1,836,968** est., $1,850,021 (8 bidders) irrigation laterals, between Shafter and Friant, Kern Co., DC-4577, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lindsay, Calif. Bids Jan. 4. CD 11/29.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Thompson Constr. Co., 8330 Hindry Ave., Los Angeles, Calif., LB **$2,465,402** (4 bidders) Sect. 8-lane divided freeway, 1.1 mi., incl. 8 undercrossings, San Diego Freeway between Ohio Ave. and Waterford St., Los Angeles, Los Angeles Co. Bids Jan. 12. CD 12/16.

▲† **Robert E. McKee General Contractor, Inc.**, 4700 San Fernando Rd., Los Angeles, Calif., LB, **$2,438,154**, est. $2,291,079. (9 bidders) maintenance hangar, fire station, deluge fire protection sys., paving and utilities, McClellan Air Force Base, ENG-04-167-56-30, SACRAMENTO, CALIF. U. S. Eng., 1209 8 St., Sacramento, Calif. Bids Jan. 12. CD 12/16.

BUILDINGS—LB & CA

▲ **Hydrocarbon Constr. Co.**, 4604 Main St., Houston, Tex., CA, 200 tons per day anhydrous ammonia PLANT, to process natural gas, near FINLEY, WASH. Phillips Pacific Chemical Co. (Pacific Northwest & Phillips Petroleum Co.) Bartlesville, Okla.

▲ **McDonald Brothers**, 2639 S. La Cienega Blvd., Los Angeles, Calif., CA, **$2,422,753**, Watts Junior HIGH SCHOOL, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Dec. 14, awarded Jan. 10. CD 12/16, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
February 1 Ontario

BUILDINGS—BA

▲ **N. B., Fredericton**—HOUSING—BA 2/7—Central Mortgage & Housing Corp., 1302 Gottingen St., Halifax, N. S., 160 multiple dual purpose row housing units (33 bldgs.) incl. related services, Gagetown Army Camp. $1,500,000. Plans deposit $100. S. C. Ings, c/o owner, regional constr. engr.

▲ **B. C., Port Coquitlam**—HOSPITAL UNIT—BA 2/15—B. C. Govt., Parliament Bldgs., Victoria, 3 story, rein.-con. 300-bed hospital unit, Home for Aged. Over $1,500,000. Plans deposit $50. C. Campbell, Parliament Bldgs., Victoria, archt. CD 12/9.

HEAVY CONSTRUCTION—LB & CA

▲ **B. Perini & Sons (Canada) Ltd.**, 49 Jackes Ave., Toronto, Ont., CA **$1,681,000.** FEDERAL PUBLIC BLDG., Elm, Lisgar and Cedar Sts., SUDBURY, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Jan. 11. CD 1/18, under LB.

(Proposal Advertisement see pp. 107 to 111)

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Puerto Rico Sewage Plant Goes to Second Low Bidder

The $3,515,770 contract for the main section of the Puerto Nuevo Sewage Treatment Plant to serve the entire metropolitan area of San Juan, Puerto Rico, covers 3,350 linear meters of piping, pumps, meters and gages, cranes and hoists.

On a bid 2¼% above the low, contract went to the Raymond Concrete Pile Company of Puerto Rico, in part because of their faster completion time, 700 days as against 750 days for the low bidder.

Work is for the Puerto Rico Aqueduct and Sewer Authority. Buck, Seifert and Jost are consulting engineers.

Earlier contracts totalling $191,003 covered screens, grit collecting and washing equipment, settling tank and chlorinating equipment.

Still to be awarded is the last of the major contracts for electrical work on which the Authority opened bids December 19.

The eight bidders on the main section include:

1	Wm. M. Moore Building Corp. & Lopier Construction Corp., New York, N. Y.	$3,428,465
2C	Raymond Concrete Pile Company of Puerto Rico, San Juan, Puerto Rico	$3,515,770
8	Montgomery Construction Corp., Sancture, Puerto Rico	$3,832,898

Bids: 10-3-55 Items	Unit	Quantity	Unit Prices 1	2C
Earth excav & bkfl				
above elev 1.0 m	cm	13,000	$2.00	$1.80
below elev 1.0 m	cm	30,000	12.00	14.00
Borrow for fill & embkmt	cm	40,000	2.00	3.25
for surf dress & loan	cm	11,500	3.00	3.30
Sheeting, left in place	Mfbm	40	200.00	90.00
Piles, wood	lm	50,000	.80	8.00
Gravel & cr stone	cm	1,000	4.00	5.00
Fill, selected	cm	1,500	3.00	3.00
Pile bents, std, 6m deep	ea	50	200.00	100.00
Piles, addnl to 6 m	lm	50	15.00	5.00
Foundations, timber	Mfbm	5	400.00	320.00
Conc msry, Cl A	cm	12,200	75.00	75.00
Cl B	cm	350	60.00	42.00
Portland cement	bbl	26,000	4.00	4.60
Steel, reinf	lb	10,000	0.10	0.12
Msry in MH & fndn, common brick	cm	10	130.00	185.00
fire brick	cm	3	200.00	500.00
Screens	l*	ls	job 1,000	900.00
Grit collectors	l*	ls	job 3,000	1,200
Settling tanks	l*	ls	job 12,000	7,000
Chlorinators	l*	ls	job 3,000	1,300
Pumps	l*	ls	job 10,000	4,000
Pump units, non-potable water		ls	job 12,000	12,000
sludge		ls	job 20,000	20,000
seal water		ls	job 1,500	1,300
Sump pumps		ls	job 7,000	5,000
Sludge digest tank, float cov.		ls	job 170,000	166,000
Gas collect & utilization equip.		ls	job 15,000	15,000
Pip & appur, inside		ls	job 400,000	410,000
Piping, outside wl, 1"		lm	30	2.50	2.50
1½"		lm	150	3.50	3.50
2"		lm	300	4.50	4.50
2½"		lm	40	7.00	7.50
CI, B&S, 4"		lm	30	9.00	16.00
6"		lm	200	10.00	18.00
8"		lm	200	12.00	22.00
10"		lm	60	15.00	30.00
12"		lm	10	18.00	33.00
16"		lm	25	20.00	50.00
18"		lm	5	25.00	60.00
CI, flanged, 6"		lm	100	12.00	22.00
8"		lm	5	20.00	55.00
10"		lm	20	50.00	85.00
CI, soil, 4"		lm	5	6.00	10.00
6"		lm	5	8.00	15.00

Bids: 10-3-55 Items:	Unit	Quantity	Unit Prices 1	2C
Piping, outside				
stl, 8"	lm	530	3.00	20.00
stl, rbbr lin, 4" l	lm	5	20.00	9.00
5" l	lm	60	2.00	6.00
uscolite, 1" l	lm	10	3.00	4.00
VC, 4"	lm	30	4.00	5.00
6"	lm	80	5.00	6.00
8"	lm	110	6.00	8.00
12"	lm	200	10.00	14.00
15"	lm	80	15.00	21.00
RC, sewer, 30"	lm	10	60.00	65.00
48"	lm	5	100.00	112.00
90"	lm	150	300.00	280.00
RC, pressure, 72"	lm	1,070	210.00	200.00
Tubing, copper, ½"	lm	50	4.00	4.00
Gate valv & hydrants, outside	ls	job	2,500	2,000
Farm tile, unglazed, 4"	lm	5	4.00	3.00
Str stl & misc met work	ls	job	190,000	154,000
Meters & gages	ls	job	20,000	22,000
Cranes & hoists	ls	job	55,000	45,000
Superstr & appur	ls	job	208,000	210,000
Labor furntr & equip	ls	job	9,000	20,000
Roadys & paths,	lm	4,300	3.00	4.00
Fencing	lm	1,570	10.00	15.00

* cm—cubic meter, lm—linear meter

** The equipment was furnished in previous contracts (see text)

County Bridge in Calif

The reinforced concrete bridge in Puente, California, for Los Angeles County Road Department will cost $70,150. Contract to Howard B. Gilbertson Company for an 80-foot roadway and two 11-foot sidewalks includes 320 linear feet of approaches. It is supported on piles.

The lump sum bid for the reinforced concrete bridge averages $18.75 per square foot of roadway deck. The class A concrete requires six sacks of cement to the yard.

Work has been held up by the strikes in the aggregate plants that ended on January 3 and has run into bad weather. The contract allowance for completion was 170 calendar days with a $50 a day penalty.

Wage rates range from $16.60 per day for common labor to $22.20 for skilled personnel.

The three bidders are:

1C	Howard B. Gilbertson Co., Los Angeles, Cal	$70,150
2	Griffith Construction Co., Los Angeles, Cal	$81,930
3	Byerts & Sons and Walter Holzworth, Los Angeles, Cal	$82,340
EE	Los Angeles County Road Dept	$77,100

Bids: 11-15-55 Items:	Unit	Quantity	Unit Prices 1C	2
Bridge, reinf conc	ls	job	$45,000	$52,500
Channel work	ls	job	2,000	2,550
Remov exist drain facils	ls	job	11,000	13,000
Roadwy embankment	cy	600	1.00	2.15
Curb, 8" & gutter, 2'	lf	700	2.10	2.30
Aggr base, type R, 10"	sf	38,000	0.145	0.16
Premix pave, 3"	sf	38,000	0.135	0.145
Str stl, excav *	cy		2.50	1.90
Reinf stl *	lb		0.095	0.10
Conc, cl A *	cy		44.00	41.00
Piles, driving *	lf		2.60	2.90

** Supplemental item utilized only for increase or decrease in lump sum price bid for the appropriate item, in the event of a change in plans.

Time allowed: 170 calendar days
Liquidated damages: $50.00 per day

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Feb 2—Wage Rates, Building Board, Lath, Insulation
- Feb 9—Cement, Aggregate, Ready-mixed Concrete, Asphalt
- Feb 16—Iron and Steel Products, Pipe
- Feb 23—Wood Products, Glass, Explosives, Chemicals

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION—SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE—LOAD BEARING—SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$139.75p	$139.75p	$279.55p	$314.45p	.....	.....	$30.00p	$30.00p	.....	.....	.....
Baltimore	202.00	216.00	405.00	458.00	596.00	681.00	36.00k	41.00k	33.00	22.00	.....
Birmingham	135.00p	152.00p	303.00p	458.80	376.00p	465.00p	27.00ff	38.00gg	33.35	22.30	26.33
Boston	200.00†	213.40†	450.00†	458.80†	.....	.....	38.00p	42.35p	35.20†	30.00†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	28.00	30.00	36.00	29.00	.....
Cincinnati	205.00j	225.00j	296.00jdd	213.00	288.00	314.00	45.00j	46.00j	28.50j	24.25t	28.50
Cleveland	192.00**	204.00**	.....	.....	.....	.....	43.00	47.00	29.75	24.75	33.50ee
Dallas	.....	118.00	.....	.....	.....	.....	19.75	32.25	32.00	31.00	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	41.00	34.80bb	28.00bb	34.00bb
Detroit	189.00	201.00	377.00	.....	551.00	630.00	40.50cc	41.00cc	36.00	31.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	29.25	29.25	32.00	27.50	28.50
Los Angeles	r	r	r	r	r	r	27.50ll	.....	34.00	34.00	35.00
Minneapolis	181.00p	201.00p	414.00p	201.00pvv	.....	.....	41.00*p	47.00	42.00bbe	32.00bbe	44.00bbda
Montreal	164.00aq	178.00au	325.00au	270.00	288.00	.....	39.50	46.00	39.20	22.00	13.75u
New Orleans	180.00	180.00	340.00	380.00	.....	.....	35.00	35.00	30.60	21.50	21.50
New York	151.90h	162.00h	222.70ch	245.40hn	.....	.....	44.00	.....	32.00	36.00	.....
Philadelphia	156.30	166.80	312.70	375.20	.....	.....	30/34	34/40	27.60	25.60	3.17
Pittsburgh	154.00	162.00	292.00	340.00	420.00	495.00	36.00	46.00y	32.00	29.50	2.97m
St. Louis	162.00cc	175.00cc	358.00cc	465.00cc	.....	621.50	41.50ml	43.00n	95aaa	80aaa	1.55aaapss
San Francisco	156.85a*	177.10a*	235.30ddda*	.....	.....	.....	39.50*	39.50*	26.60	26.60	30.50
Seattle	225.00cc	250.00cc	350.00cc	250.00ccw	.....	.....	43.00s	55.00s	46.00hhh	37.50hh	3.90mhh
Toronto	138.70	148.90	273.75	222.00f	.....	.....	41.50	59.00	40.50	33.50	30.00

*† F.o.b. yard Roxbury. *a Smooth. *b Per 50 lb. bags. *c 8 x 12 x 12 in.-3 cell. *d Pulverized hot. *e 8%, 10th following month. *f 8 x 8 x 12. *g 8½ x 8 x 12. *h F.o.b. trucks, job site N.Y.C. *i Truck load or over. *k $1.00 discount. *l Red face. *m Per bbl., 180 lb. *n 7½ x 7½ x 12. Speed title. *p Truck lots. *q Provincial and Municipal tax extra. *r Not used because of earthquake danger. *s 2% discount for cash. *t 8½ x 8 x 11¼. *u Tax exempt. *v Sand lime. *w 5 x 8 x 12. *y Stacked. *z Pebble lime price per 80 lb. sack. Lime not sold per ton. *bb LCL. *cc Truck delivery. *dd 6 x 12 x 12. *ee Pebble lime. *ff 80% common. *gg Rough. $40.00 Smooth. *hh Ict. ‖ F.o.b. yard. *** Warehouse delivery. ** F.o.b. plant Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

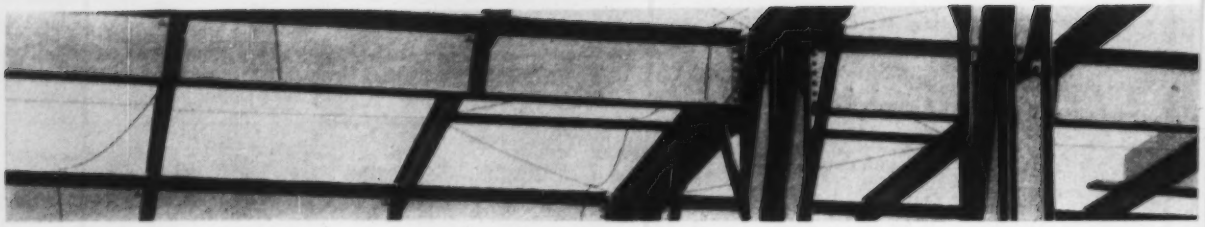
	RED LEAD Per 100 lb. in 800-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. in 100 lb. cases In oil w	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$18.25	$28.275	$3.26	$3.51	$3.01	$3.10	$2.91	$2.91	$0.60	$55.00
Baltimore	18.00	27.90	2.75	4.25	3.35	2.78	4.25	4.25	.48	50.18
Birmingham	18.25	28.275	3.90	3.40	....	2.78	2.55	2.55	.75ff	33.50ee
Boston	18.00	27.90	....	....	....	2.86gq	2.66oq	2.66oq	.45q	50.50q
Chicago	18.00	27.90	....	....	....	2.77½s	2.65½o	2.65½o	.43.50½bbr	50.50½
Cincinnati	18.00	27.90	....	....	....	2.88	2.60	2.60	.55y	49.38
Cleveland	18.00	27.90	2.21pqq	2.52qq	2.02qqq	2.53q	2.28o	2.28o	.43y	44.00AA
Dallas	18.25	28.65	....	4.05	....	3.50q	3.75o	4.35o	.36	58.50AA
Denver	18.50	28.40	3.29	5.15	3.04	2.53	1.90o	2.60o	.48ff	45.00
Detroit	18.00	27.90	2.35	3.25	2.50	2.53	2.28f	2.28f	.55	44.00
Kansas City	18.00	28.65	3.50	3.00yz	2.65	2.45	2.27o	2.27o	.37	54.83
Los Angeles	18.00	28.15	3.30m	4.50m	4.20m	3.10m	2.25en	f	.64aq	f
Minneapolis	18.00	29.88/28.02	....	....	....	2.53dd	2.28hidd	2.28hidd	.48hidd	44.00v
Montreal	....	21.95	2.95Dff	4.06Eff	3.25Fff	....	....	....	....	....
New York	18.00	27.90	....	....	....	2.53G	2.28Go	2.28Go	.48Gs	44.00*
Philadelphia	18.00	27.90	3.60	3.40/3.65	3.50/4.60	2.54	2.94	2.94	.37	26.00
Pittsburgh	18.00	27.90	3.10	3.36	3.68	2.72	2.60o	2.60o	.42	52.00
St. Louis	18.00	27.90	....	....	....	2.38	2.15h	2.28h	.43y	51.25
San Francisco	18.00	28.15	2.95	4.15	3.40	2.62	1.75ee	....	.44	....
Seattle	18.00	28.40	3.09mee	3.67mee	....	3.42mqee	2.91hmee	....	.85mee	52.00ww
Toronto	....	....	....	....	....	4.48	4.10	....	1.80	80.00

*‡ Delivered. * Note: Red lead in oil 50¢ higher than white lead in oil. *a Red lead prices change frequently due to pig lead price changes. *b U. S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80%, minimum ferric oxide. *e 15 lb. *f Per 432 sq. ft. *g F.o.b. yard, Roxbury. *h Per roll, 65 lb. *i Net carload lot prices; Minneapolis and vicinity. *k Per cwt. *l Not used. *m 1% discount for cash. *n F.o.b. city. *o Per 80-lb. roll. *p 6-drum, 50 gal. ea. *q Per 90-lb. roll. *r F.o.b. factory, Chicago. *s 488 Med. *t Federal tax included, add 5% mun. & prov. tax. *u Per 90-lb. square. *v Per ton. *w Price to large paint contractors is $1.25 less. *x Mineral surfaced. *y 55-gallon container. *z Drums. *aa 15, 324 sq. ft roll *bb Roofers coating and cement; Price per ton. *cc LCL, truck delivery. *dd 2% cash discount. *ee Asphalt pitch in 100 lb. package. *ff 5-gal. drums. *gg F.o.b. factory. *hh Incl. freight. *D Std. Black. *E Ready-mixed. *F Over 80% ferric oxide. ** Aver. wt. approx. 425 to 880 lbs. drums. *G Freight absorbed to destination not over .38 cwt.

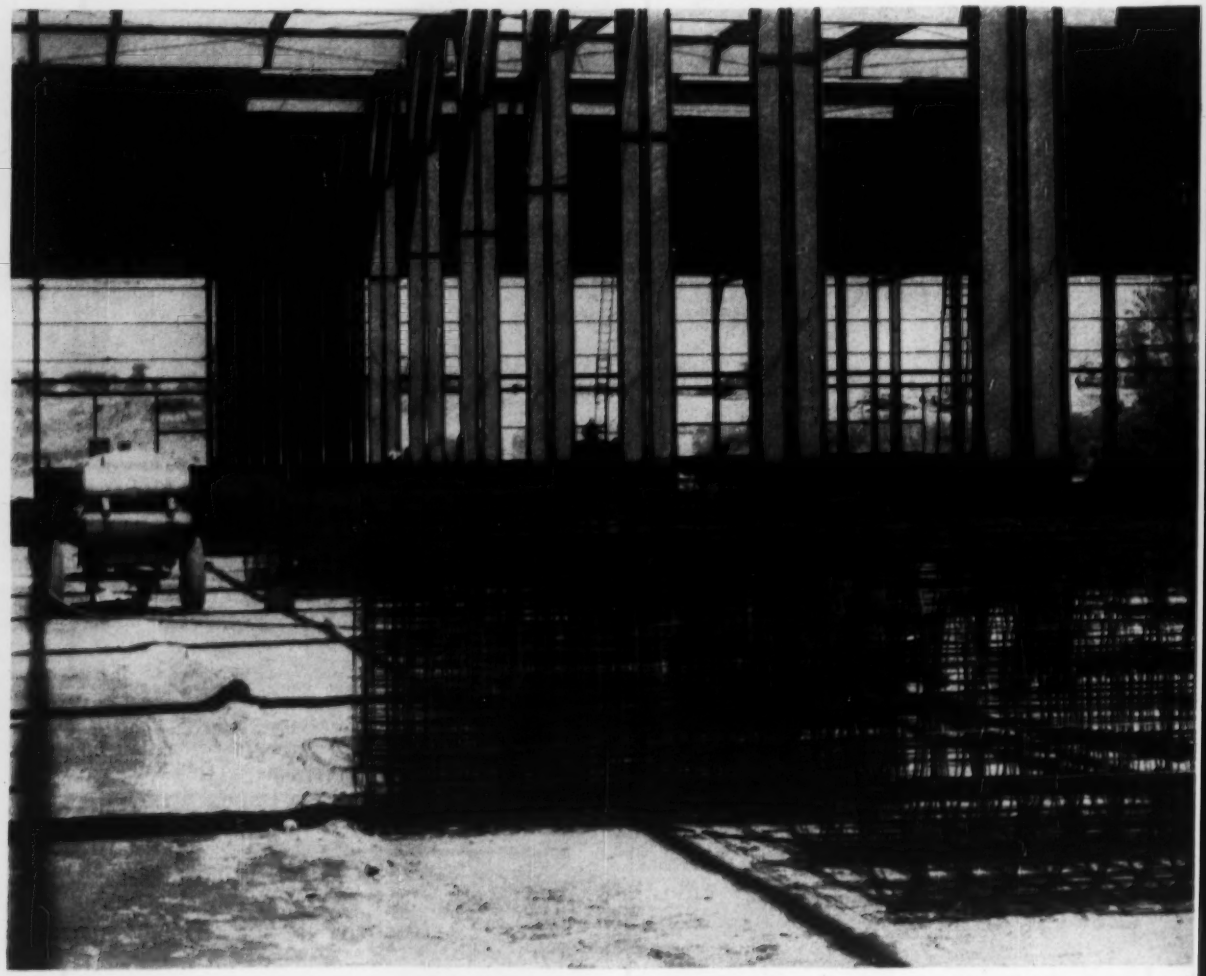
PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home Insulation pellets	Plaster aggregate	Concrete AGGREGATE† Treated	Untreated	ALUMINUM SHEET‡ Flat: .102" th 36"x96" & 48"x144" per lb	Corr roof .032" th 35"x12' per sht	STAINLESS STEEL SHEET*-TYPE 302g 20 ga 48"x96-120" per cwtkk	28 ga 36"x120" per cwtmm	COPPER WATER TUBING-TYPE L 2000 ft lots per ft○ ½"b	½"c
			per bag of 4 cu ft									
Atlanta	$29.00	$36.00	$1.45*	$1.35*	$1.50*	.....	$0.350n	$7.067n	$53.68*	$61.18*	$18.57f	$31.93f
Baltimore	22.85	33.25	0.95	1.15	.....	$1.15	0.391	0.427r	56.25	64.25	0.21	0.30
Birmingham	38.00	43.00	1.55	1.55	1.75	....	0.437	9.07	55.68	65.68	0.2099	0.3193
Boston	22.00	29.00	1.15/1.20	1.18/1.23	....	1.30	0.44p	36.15op	55.81dd	61.585ddff	0.1857	0.2699
Chicago	26.80	26.80	1.55	1.60	1.60	....	0.43o	8.992dp	57.554ee	65.554ee	0.1857	0.2699
Cincinnati	21.60**	21.60**	1.75	1.75	1.85	1.75	0.400	8.06	57.80	69.30ff	0.1857	0.2699
Cleveland	27.50	48.00	1.25	1.32	1.40	....	0.415aa	8.66	57.81	65.81	19.00f	26.00f
Dallas	29.80	31.80	1.20	1.25	1.30	....	0.379	0.439r	55.00	63.00	0.1449	0.2029
Denver	24.00	24.00	1.45	1.35	....	1.50	0.437	8.89	57.67gg	67.87gg	0.1773	0.2496
Detroit	25.00	25.00	1.32	1.33	1.42	1.42	0.415	8.780	57.80	65.80	17.00fee	29.83f
Kansas City	30.00	35.00	1.20	1.30	1.40	....	0.416	9.94	60.72ee	68.72ee	21.07f	29.60f
Los Angeles	26.20	27.50	1.25ss	1.20ss	1.45ss	1.25ss	0.44	9.04	64.50	72.50	0.1857	0.2699
Minneapolis	31.00	31.00	1.30	1.60	....	1.80	0.43	7.85	58.26	71.01ff	0.1807d	0.2606d
Montreal	28.80	33.20	1.00	1.30	1.35	1.30	0.372	8.25	62.75	....	0.26	0.320
New Orleans	35.00	40.00	1.50	1.20	1.25	1.25	0.388	0.366aabb	58.18	66.18	0.1857	0.2699
New York	23.00	29.00	1.25	1.20	1.40	1.30	0.434ee	8.50d	58.42	66.42	18.57f	26.99f
Philadelphia	23.25	32.00	1.35	1.35	1.35	1.40	28.50dez	7.55d	53.23d	60.98d	18.57f	26.99f
Pittsburgh	27.50	31.00	1.30	1.30	1.37	1.32	0.42	9.19	56.81	62.63	0.1923	0.2437
St. Louis	31.00	38.00	1.30	1.55jj	1.60jj	1.50	0.45o	8.89e	56.64kk	75.64kk	18.57fm	26.99fm
San Francisco	27.85	27.85	1.06	1.05	....	1.24	0.416	8.14ee	71.85	....	0.1857	0.2699
Seattle	33.00	36.50	1.45	1.25k	1.85	....	0.388	7.589	60.50ee	68.00ee	0.1773	0.2496
Toronto	32.50	42.00	1.20	1.45	1.45	1.35	0.394	21.55	58.80	92.40	0.3131pp	0.3937pp

† trucklots, delivered * carload ‡ delivered *a fob city *b ½" O.D. *c ¾" O.D. *d 10M ft & over *e 2-10M ft; 10M ft & up $0.1925 ft *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled; 2B finish *h 15M lb *i 3003 alloy; 1100 alloy; $0.456 lb *j 1100 & 3003 alloy, mill finish *k per bag of 3 cu ft *l treated has air entraining agent; untreated does not *m 2-10M ft *n fob plant, fr allow *o 5M lb & up *p 100 sq ft quantity *q 2M lb quantity *r per lb *s 30# bag *t 36" x 96"; 10.81 lb/sh; 48" x 144" 21.7 lb/sh *u 19.31 lb/sh *v In 4M-lb skids; $0.296 lb in 1M-lb cases *w 48" x 144" *x 36" x 96" $13.25/sh *aa 18M lb & up *bb fob mill *cc 28" x 8-12' *dd add $0.75/cwt for boxing *ee 4 tons & up *ff 26 ga *gg add $2/cwt boxing; $0.75 cwt on skids *hh Theoretical wt for 48" x 96"; 90.4-lb, per sh. *ii 300-bag lots *jj per 100-lb bag *kk mill shipment; add $2 per cwt for immediate del *mm Theoretical wt: 19.7-lb per sh *nn Daily, warehouse means *oo ¼" O.D. *pp Incl 10% sales tax



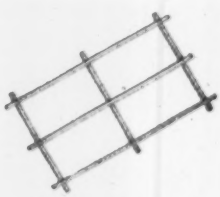
How WELDED WIRE FABRIC



GET A JUMP ON THE WEATHER

Order your

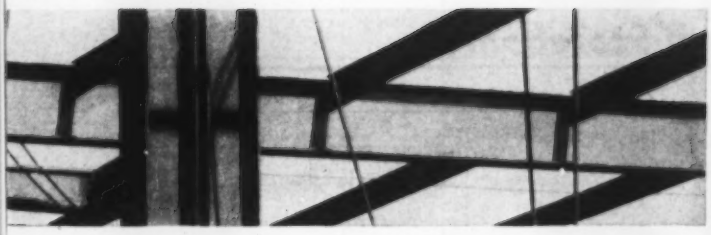
Wire Fabric NOW!



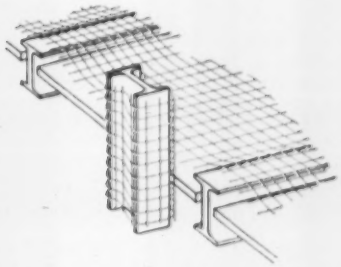
When the weather breaks next spring, you will want to dig in *at once* on all important construction jobs. You will need plenty of American Welded Wire Fabric on hand ready for immediate use.

The best way to be sure of having enough is to stock up *now* on the sizes and styles you will use.

Get in touch with your local supplier today.



speeds up building construction



In SHORT-SPAN concrete floors, you just unroll American Welded Wire Fabric reinforcement into place and let it droop continuously from beam to beam (see ACI Building Code, Sec. 505b). The long prefabricated rolls guarantee continuity of reinforcing action and speed up installation.

American Welded Wire Fabric takes less steel too. It is allowed a working stress about 40% higher than ordinary reinforcing materials (ACI Building Code, Sec. 306). As a result you get the needed strength in reinforced short-span floors with about 28% less steel area. With American Welded Wire Fabric, you have less material to transport and unload at the job. This cuts labor costs to the bone.

Write to our nearest sales office for complete information.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

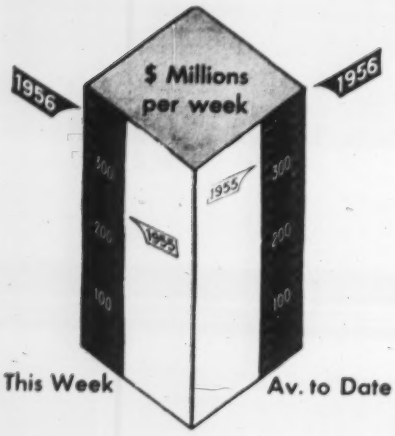
EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS

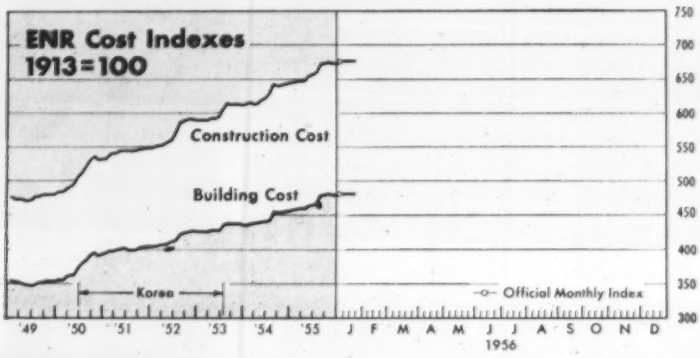
USS AMERICAN WELDED WIRE FABRIC

UNITED STATES STEEL

Construction Scoreboard

Contract Awards





ENR INDEXES (1913 = 100), 20-cities' average	1956 Jan. 19	% Change from last Month	% Change from last Year
Construction Cost	679.35	+0.9	+5.3
Building Cost	482.82	+0.9	+5.2

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.845. To convert to 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 4 wks 1956	Chge %
	$ millions		
Federal	$55.3	$194.6	+19
State and Municipal	157.6	531.5	+63
Total Public	212.9	726.0	+48
Total Private	149.4	866.8	+8
U. S. Total	$362.3	$1592.8	+23
By Type of Work			
Waterworks	$3.8	$22.4	−22
Sewerage	87.5	112.2	+403
Bridges	7.4	39.3	+8
Highways	28.2	146.5	+23
Earthwork, Waterways	34.2	73.9	+112
Buildings:			
Public Excl. Hsg.	37.9	193.2	+20
Public Housing	7.9	34.9	+751
Private Housing	80.1	373.3	−16
Commercial	23.0	198.7	+106
Industrial	40.8	259.2	+13
Unclassified	21.5	139.2	+15
U. S. Total	$362.3	$1592.8	+23

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Jan. 19	Cum. 3 wks 1956	Chge '55-'56 %
	$ millions		
Corporate Securities	$59.7	$71.5	−51
State and Municipal:			
All Except Housg.	117.9	78.7	+27
Housing	....	....	−100
Federal Loans	1.2	7.5	−6
Federal Aid	....	....	....
Total Nonfederal	$178.8	$257.6	−16
Federal Appropriations:			
In U. S.	$....	$....	....
Outside U. S.	....	....	....
Total New Capital	$178.8	$257.6	−16

HEAVY CONSTRUCTION BACKLOG

Millions of dollars	Dec. 31 1955	% Change from last Month	% Change from last Year
Total U. S. (ENR reported)	$93,053	+1.7	+16.8
By Ownership—			
Private	39,136	+3.2	+18.0
State & Municipal	41,176	+0.8	+20.5
Federal	12,741	+0.2	+3.1
By Type of Work—			
Waterworks	1,990	+0.4	+20.8
Sewerage	2,988	−0.3	+2.5
Bridges	2,682	−1.3	+14.5
Highways	11,313	−0.5	+31.6
Earthwork, Waterways	11,293	+1.6	+21.0
Public Buildings	16,405	+1.6	+8.6
Industrial Buildings	14,302	+3.9	+21.8
Commercial Buildings	15,767	+3.0	+21.8
Unclassified, Private	9,067*	+2.3	+8.1
Unclassified, Public	7,246	+0.4	+8.5
By Regions—			
New England	5,053	+0.5	+28.8
Middle Atlantic	19,790	+1.4	+15.3
South	11,445	+3.4	+15.8
Middle West	16,547	+1.8	+17.4
West of the Mississippi	21,974	+1.1	+8.8
Far West	18,244	+2.0	+26.3

* Includes private bridges, $78 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

Millions of dollars	1955 Dec.	1955 12-Months	% Change from '54 Mo.	% Change from '54 Year-Cum.
Total U. S. (ENR reported)	$2,461	$24,022	+89	+54
By Ownership—				
Private	1,610	11,672	+82	+42
State & Municipal	762	10,952	+94	+71
Federal	89	1,398	+287	+46
By Type of Work—				
Waterworks	60	593	+9	+97
Sewerage	32	383	+256	+10
Bridges	9	673	+200	+165
Highways	44	3,892	+267	+72
Earthwork, Waterways	203	2,358	†	+140
Public Buildings	410	3,081	+29	+23
Industrial Buildings	705	4,647	+141	+84
Commercial: Mass Housing	252	3,211	−11	+50
Other Bldg	402	2,381	+202	+29
Unclassified, Private	250	1,433#	+41	−17
Unclassified, Public	92	1,369	+464	+87

Includes private bridges, $14 million † +20,200%

Homebuilders See Sharp Decline This Year

Credit curbs, rising land costs push new home prices up; many areas anticipate 15% drop in housing starts in '56

Clyde C. Henning, Jr.
Associate Editor

NAHB-selected homebuilders from 35 areas met last week for a two-day, behind-closed-doors appraisal of the '56 outlook. After swapping notes, one theme was clear: The homebuilders generally are singing the blues.

Tight money and higher land costs, along with some other potent factors, are sending more and more builders to the medicine cabinet for aspirin. The mass housing developers, all of whom surveyed other builders before making the trip to Washington, look for a sharp drop in '56 starts. A handful thought the total might hit 1,200,000 in '56 (as against 1,330,000 in '55), but most of the builders picked 1,100,000 starts as their guess for the year.

Significantly, the downturn was predicted after FHA and VA announced, on Jan. 17, that maximum maturities would go up to 30 years again after being cutback to 25 years since July 30, 1955.

Not all areas will suffer. Half a dozen said they'll build as many houses this year as they did in '55. The six: Salt Lake City, St. Louis, Rochester, N. Y., Camden, N. J., Dayton, Ohio, and San Diego.

All other areas agreed that the bloom is off the rose. Seattle, Wash., which expects to show one of the biggest drops, has most of the problems that other areas report.

Seattle's pessimism is two-fold. The biggest complaint is mortgage money. According to Seattle builders, money is hard to get and terms are stiff. Debt-laden prospective buyers, who left their new television set to take a ride in their new car to see some homes found out to their surprise that they didn't have enough credit left to buy a house. Some builders have to "sell" the same house three or four times before they get a sale that will be approved by the banks.

Part of the answer to the riddle, both in Seattle and elsewhere, is that houses now cost more than they did a year or two ago. The cost of raw land is up—substantially. Construction costs have gone up. And, prospective home buyers want bigger houses. Most popular size in the Seattle area now is a house with 1,200 to 1,400 sq ft of space as against 900 sq ft in recent years. The trend toward more bathrooms and larger living areas accounts for a good chunk of the higher housing cost.

Another price-booster is consumer demand for "gadgets," such as built-in ovens, automatic dish-washers and other appliances—and certain "amenities" that add dollars to the construction cost.

Seattle's price pattern isn't unusual. The 35 builders at the Washington session reported that home prices have moved up significantly in the past two years. The typical increase reported in '55 was $1,500 over '54, bringing the typical home price to $14,500. This year, prices are expected to move up another $500, reflecting the trend toward larger houses, higher construction costs and substantially-higher land costs.

Land Prices Soar

Almost all of the builders represented have land available now for this year's operations. But all of them put land acquisition and improvement near the top of the headache list.

Three out of five of the homebuilders said they would cutback their '56 plans "drastically" if they had to go into the market and buy land at today's prices. Behind this is the builders' lament that the price of raw land suitable for mass housing has doubled in price in the past two years. Most of the skyrocketing land prices, of course, have turned up in the suburban areas around the great metropolitan centers where much of the boom has taken place in the post-war period.

More important than the cost of the raw land itself is the steady increase in the cost of physical improvements and facilities that must be provided before the raw acreage is suitable for development.

For many builders, one basic rule-of-thumb has been that improved lots should represent about 10% of the sales price of the completed home. That rule has been tossed out of the window. In today's market, the cost of the improved lot now runs anywhere from 14% to 25% of the total sale price of the home.

Higher requirements for utility installations, street improvements, and larger lot sizes, required by more and more communities, have played a role in this price hike.

Fringe Costs

In the Detroit area—and elsewhere—builders have been hit with a variety of fringe costs. These fringe costs take many forms. Some areas, well-established and traditionally slow on growth, resent mass housing. To curtail it, they try to load some of the community service charges on the homebuilder. One device: requiring the builder of a new home to pay the community a specified sum (generally from $100 to $500) which will be allocated for schools or other community facilities. These costs, of course, are passed on to the buyer. And, the higher the price of the home goes, the fewer the buyers.

Many communities are driving homebuilding costs up in another way—requiring lot sizes that tend to rule out mass housing projects. Some areas require a minimum of one acre for each house. Others get the same effect without specifying the lot size, but the net result is the same—land costs more, and homebuilders would like to do something about it before the situation gets completely out of hand. One possibility—for the urban areas—might be a resurgence of row houses.

Another possibility: More apartment house construction to get better use of expensive land, particularly in the suburbs that are closest to the heart of the city.

For the short run, homebuilders saw another hope: As housing starts to go down, there will be less demand for new sites and probably lower prices. That might hold true for one or two years, builders say, but the long-range growth pattern of the economy makes it certain that land will cost more, not less.

More Competition

What will higher costs and more competition do to the homebuilders? NAHB experts were unanimous: So-called "spare-time" builders will leave the field, at least for the next year or so, and the ones who stick with the industry will have to live on a smaller cut of the pie.

(*Continued on page 100*)

. . . Homebuilders see sharp decline

"Mortalities" in the housing field probably will run high this year, the builders agreed. Some will fail. But others will quit while they're still solvent. It won't be just the smaller firms that will bow out. NAHB's Earl W. Smith summed it up like this:

"These so-called mortalities will be across-the-board. The postwar housing market was so strong that it attracted a lot of newcomers. Some of them started small and are now big. But they often have other interests and in the face of today's tougher market, a lot of them will leave."

Closely tied to Smith's prediction was a feeling—almost unanimous in the group—that 1955 was the best year for housing that the industry will see—at least for the next five years.

Smaller family formations (dating back to the low birthrate of the Thirties) are cited. But that's not the only reason. Memphis builder Manny Delugach, for example, reported that builders in his area depend on 40% of their new home sales coming from those who already own a home. Here again, say the builders, when tight money rears its head, sales fall off. They've fallen off so sharply in Memphis that Delugach says the area is overbuilt—"under present conditions." For '56, Memphis sees a drop of 25% in new homes built.

Here's how some of the other areas stack up, according to the builders:

Indianapolis—Starts will be down from the near-record output of '55, probably will wind up close to the '54 level (which was good).

Denver—Modest decrease in '56. Money is hard to get, and expensive.

Washington, D. C.—'56 will be down slightly from the past two years. Medium price of new homes is likely to go up because of higher land costs and larger houses. Money is also tight in this market.

Salt Lake City—Here's one of the bright spots. '56 should match the record '55 level. But profit margins are low in this area.

Rochester, N. Y.—Another bright spot. Should be close to the '55 volume. But consumer credit is causing concern. Many potential buyers can't qualify for mortgages.

Atlanta—Outlook is for fewer starts. And, builders are planning to move into the lower-price home market, hoping to harvest a new crop of buyers.

Wichita, Kans.—Small decline seems to be in the cards.

Charlotte, N. C.—Starts will drop back to the '54 level. Money is a serious problem. Trend is toward larger, better equipped, more expensive houses.

Akron—Fewer starts, but average price of new homes will be up. Potential buyers are loaded with automobile debt and they're finding it difficult to qualify for mortgages. Result: Sales are slow.

Boston—For housing, demand and supply will be nearly in balance. Fewer homes will be started. But the price of homes probably will stay where it is.

Houston—This is a city with a big "if." Everything hinges on supply of mortgage money "at reasonable rates." If the money is there, housing starts could run ahead of '55. But if the money situation says tight, there'll be a big cutback.

Detroit—Another good year coming up in '56. But not as good as '55. Some pickup expected in rental housing.

Camden, N. J.—Demand for new homes is still strong, but credit curbs may bring the '56 total somewhat under '55.

San Diego—No let-up in demand for homes.

Racine-Kenosha, Wis.—Substantial cutback expected because of a shortage of mortgage money.

Kansas City, Mo.—Modest decline in new home production.

Dayton, Ohio—Builders optimistic. Output will come close to '55.

Fort Worth, Texas—Decline of 10% expected, would be well above '54, however.

Miami—Substantial cutback. Shortage of land, tight money and community facilities—such as sewers—make construction expensive.

St. Louis—Demand for new housing steady. Finding mortgage money at the right price is a problem.

Cleveland—A downturn in starts seems certain. But the new homes will cost more.

Tulsa—The story comes close to the picture in Cleveland and elsewhere. Fewer homes will be built. And buyers will pay more for the new homes.

Utilities Speed Expansion

Expansion plans announced in recent weeks give solid support to Edison Electric Institute's estimate that U. S. utilities will spend a record $2.9 billion for new plant and equipment in 1956.

Among the latest to announce contract plans are: Baltimore Gas and Electric Co. which plans to spend more than $211 million for additional facilities during the next five years. About $40 million is earmarked for construction this year.

Public Service Co. of Colorado expects to spend $110 million through 1959. A record budget of $27.4 million is earmarked for construction during 1956.

An expansion program of $87.4 million is being pushed by Pacific Power and Light Co. Its proposed hydroelectric project on the Lewis River in Washington State will cost about $63 million, leaving $24.9 million for transmission facilities in Montana and Wyoming.

Southern California Edison Co. plans to construct a new multi-million steam plant at Huntington Beach, Calif. Present plans call for two 200,000 kw generating units, at a total cost of $60 million.

Pacific Gas & Electric Co. of San Francisco has scheduled natural gas pipeline and electric generating facilities totaling $130 million. The company will spend $21 million to lay a 150-mi addition to its Super Inch gas main now extending from the Arizona border to San Francisco Bay. Electric generating capacity will be upped by 165,000 kw at Morro Bay steam plant, 50,000 kw at Humboldt Bay steam plant, and by 165,000 kw at Station P steam plant in San Francisco. This work is in addition to hydroelectric development on the Kings and North Feather Rivers, which represents some $149 million to be spent between 1956 and 1962.

Public Service Electric and Gas Co. of New Jersey has announced plans for spending more than $100 million on construction—a record amount for any single year. A good part of this budget will go toward completion of two major electric generating stations at Ridgefield and Linden. The new plants will cost more than $229 million—and upon completion late in 1958—will increase the utility's capability by 44% to 3,000,000 kw.

Utah Power & Light Co. has programmed construction of a 100,000 kw steam-electric generating plant costing an estimated $15 million. Work will start late this year or early in 1957.

(*B&F continued on page 102*)

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"We're well pleased," says Egbert Seegmiller

Contract for the big conservation dam at Glen Allan, Ontario, called for 90,000 cubic yards of specification concrete. E. & E. Seegmiller, Ltd., of Kitchener got the job last spring.

Even to this 30-year old veteran contracting firm a job of this size presented a challenge. To meet it, they bought an Erie Strayer Electronically Controlled Truck Mixer Plant.

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This control room is the "nerve center" of E. & E. Seegmiller's Erie Truck Mixer Plant. Photo shows the electronic control board and two of three dial heads with attached printer.

Erie Strayer Model P4-130C Electronic Batching Plant bought by E. & E. Seegmiller from Construction Equipment Co., Ltd. Plant capacities are: Total Aggregate, 100 Yards; Cement, 285 Barrels; Ground Storage Silo, 900 Barrels; Weight Hoppers—Aggregate, 6 Cubic Yards,—Cement, 42 Cubic Feet,—Water, 300 Gallons.

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Illinois program ready to go—

Court Approves Toll Roads

The Illinois State Supreme Court has removed the last major legal barrier to the Illinois State Toll Road Commission's $415-million construction program.

The court's decision came just five days before the deadline for delivery of the bonds to the 565-member underwriting syndicate that purchased them Oct. 25, 1955.

Bottleneck in the negotiations was a decision by the underwriters that they would not accept the bonds as long as any litigation was pending against the proposed turnpike program.

Several "nuisance" suits have been filed by property owners in the past two months, attempting to block delivery of the bonds. Two such suits still are pending, but last week's court decision was considered adequate authority for delivery of the bonds to the underwriters.

• **Three routes**—Proceeds of the $415-million bond sale will be used to build three routes in the Chicago area, totaling 193 mi. The three: an 80-mi, tri-state route linking Indiana and Wisconsin, and circling Chicago; an 88-mi Chicago-Rockford-South Beloit route; a 25-mi Chicago-Aurora route.

Estimated project cost of the 193 mi of toll roads is $352 million, exclusive of interest and financing costs. Of this amount, about $236 million will be spent for construction and $52 million for right-of-way.

The three routes will be divided into 25 design sections. With the successful delivery of the bonds to the underwriters, the Toll Road Commission can now select consulting firms to prepare these designs.

• **Timetable**—Design work now is scheduled to start by Feb. 1. Land acquisition will get under way by April 1 and the first construction contracts should be awarded by July 1.

Directing the king-size program for the Illinois State Toll Road Commission will be the new Chairman, Austin L. Wyman; Executive Director Charles L. Dearing; Administrative Assistant Marshall B. Wheeler; and Chief Engineer George L. Jackson.

Deliveries Slow for Glass and Lumber

Cement and steel aren't the only materials that are throwing construction jobs off schedule. Glass, lumber and plywood have joined the list.

Of the 20 major cities in the United States, 12 reported to ENR that they are faced with a shortage of glass. Deliveries are slow. And, Toronto, Canada, reports the same situation.

The dozen cities where the glass shortage seems most serious include Seattle, Cincinnati, Kansas City, New York, Atlanta, Birmingham, Boston, Detroit, Minneapolis, Philadelphia, St. Louis and San Francisco.

Deliveries of glass in the Seattle area take as long as four months. And, in Cincinnati and Kansas City, deliveries are uncertain with no specified delivery time.

In New York, at least one major glass manufacturer is allocating shipments. Regular customers get delivery of glass in four to six weeks. But new customers may have to wait as long as six months.

Atlanta is another spot where the lead time is long for glass, ranging from six weeks to four months.

In other areas, the situation is not as serious. Contractors in Birmingham, for example, can get delivery of glass in 30 days. Boston takes two to six weeks.

Builders in Detroit and Minneapolis also watch construction schedules go awry as they wait from two to three months for glass shipments.

Philadelphia's deliveries are termed "very slow", though no specific time is quoted. St. Louis suppliers report deliveries take a minimum of two weeks. And, in San Francisco, deliveries take as much as three months.

Los Angeles offers a contrast. Glass stocks had a chance to build up during the recent rock products strike and the supply is rated "plentiful" now. And, at least one other major building area—Baltimore—has supplies rated adequate to meet current demand.

Some cities are reporting lumber and plywood shortages. But these reports are scattered. For example: Douglas fir deliveries are slow in New Orleans, New York, San Francisco, Seattle and Toronto.

Supplies of Douglas fir are short—but deliveries are normal—in Boston, Chicago, and Minneapolis. The Chicago shortage is mild, so far.

Southern pine deliveries are lagging in New Orleans and Atlanta (dressed lumber only), while Minneapolis supplies are short but deliveries are normal.

Douglas fir plywood supplies are short in Boston (interior plywood only), Chicago (sanded only), St. Louis and Toronto.

It may be some time yet before lumber shipments return to normal throughout the nation, because of disruptions stemming from the recent West Coast floods.

Business Briefs . . .

• **More ready-mix**—Ohio ready-mixed concrete producers are stepping up production. This year, 19,712,000 bbl will be produced. By 1957, production should be up to 22,706,000 bbl, according to the Ohio Ready-Mixed Concrete Association.

• **Merger**—Two New Orleans contracting firms have merged. The two: McWilliams Dredging Co. and W. Horace Williams Co. Their new name: Williams-McWilliams Industries, Inc.

• **Boon for state buildings**—The Florida State Supreme Court has upheld the right of the Florida Development Commission (created in 1955) to issue revenue bonds for construction of state buildings. The decision affects millions of dollars worth of proposed state office building construction.

• **Urban renewal**—The federal government has agreed to grant $915,988 and loan $6.7 million for creation of the Diamond Heights urban renewal project in San Francisco, ending five years of uncertainty about the project. It will take about two years to acquire the land and prepare the 325-acre site for construction of 2,300 homes, which are to be put up by private developers.

• **Flood aid**—Homeless flood victims in Connecticut will be eligible for mortgage loans of up to $12,000 directly from the state under a $10 million program approved by the state legislature. Interest rate will be 3½% with maturity in 30 years.

• **Design deal rejected**—The Jacksonville, Fla., Chapter of the American Institute of Architects turned down a plan by the Duval County Board of Public Instruction to buy school plans outright. School Board members were trying to eliminate the architects' 6% fee where a set of plans is used a second or third time.

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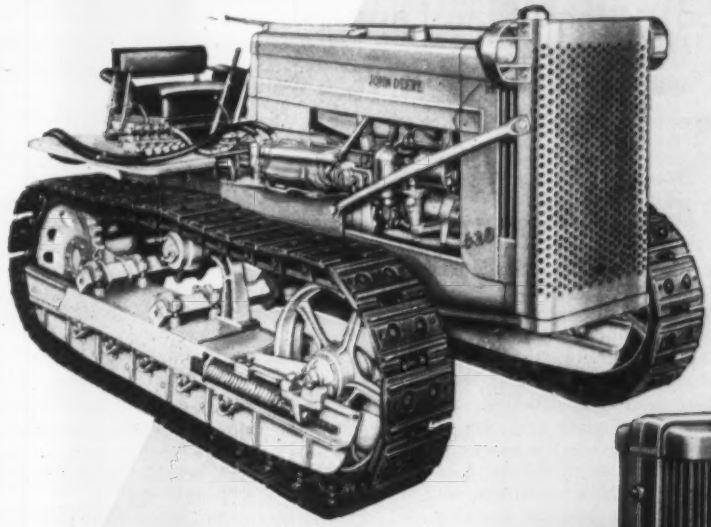

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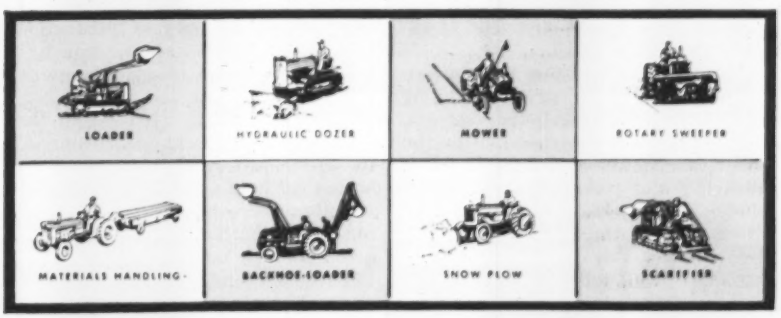

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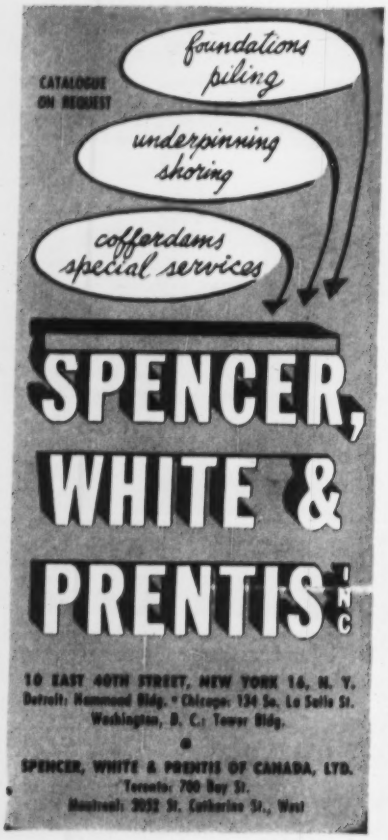
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Labor Peace Plan Launched in Texas

Program includes stabilization of labor costs through three-year contracts and a jurisdictional peace plan

The construction industry in the Houston-Galveston area of Texas has successfully negotiated a two-fold program that is regarded by its sponsors as the beginning of "a new era of construction progress and peace."

Jointly announced this month by Dunbar Chambers, president of the Houston Chapter of the AGC and Joe Marasek, secretary of the Houston Building and Construction Trades Council, the program embraces stabilization of wages and working conditions through an established pattern of three-year labor contracts, and a new peace plan designed to eliminate work stoppages stemming from jurisdictional disputes.

• **Stabilization**—Stabilization of wages and working conditions is the result of 10 months of negotiations which sought to end the turmoil of the usual short-term agreement.

During that period, 10 of the basic construction craft unions (carpenters, bricklayers, cement masons, operating engineers, iron workers, laborers, millwrights, pile drivers, pile wrappers and teamsters) have signed three-year contracts with the AGC.

Five of the craft—asbestos workers, floor layers, glaziers, roofers and sheet metal workers—have signed agreements with employer organizations.

Ten of the contracts have the simultaneous expiration date of March 31, 1958. The other five variously expire between February 28 and November 23, 1958.

• **Jurisdictional disputes**—Simultaneously achieved was a jurisdictional peace plan developed by the Employers Council for the Houston-Galveston area and the Houston Building and Construction Trades Council. It became effective Jan. 1.

Purpose of the plan is to keep construction work in progress during settlement of jurisdictional disputes.

The plan will be supervised by the newly-formed Houston Joint Planning and Policy Board, consisting of 14 members equally representing the Building and Construction Trades Council and the Labor Policy Committee of the Employers Council.

Key responsibility of the new board is the "establishment and maintenance of construction labor peace through the development of appropriate rules and procedures."

• **Its merits**—Officials of both labor and management have greeted the new program with enthusiasm. They have listed the following benefits which they expect to flow from adoption of the two-fold program:

• It will free contractors from the burden of labor agitation, strikes and stoppages, enable them to figure future labor costs with precision, and help them to meet completion dates better.

• It will generate a period of economic prosperity for the craftsman, contribute to steadier employment and produce a more predictable income.

• It will mean a saving of both time and money to the building public. Constructionwise, it will make Houston an attractive community for large industries seeking a new location for plants, offices and homes.

Engineer-Employe

Unionization advanced as solution to his problems

Considerable doubt was cast last week on the proposition that union membership for an engineer is incompatible with professionalism.

The problem was under discussion at one of the sessions held at the 364th meeting of the National Industrial Conference Board in New York.

Today's engineer was pictured as an employe. He's become increasingly specialized and departmentalized. In many instances, he works in massive groups. His salary hasn't kept pace with improved wages of production workers. In his own organization he's become the victim of salary compression. His initiative has been stifled, his ego has suffered. He's caught the common disease of chronic frustration. In many instances he's turned to unions for help.

Point of departure in the discussion was on whether the solution should be found through unionization.

The merits of unionization were presented by John Taft, vice president

of Engineers and Scientists of America, and Russell Stephens, president of AFL-CIO's American Federation of Technical Engineers. Claimed membership of the two organizations is over 50,000. Perhaps 6,500 of these are civil engineers. Both speakers championed unionization as the practical solution into the engineers' problems.

Milton Lunch, executive assistant to the National Society of Professional Engineers, claimed that professionalism—described as a concept of public opinion—doesn't embrace union participation. He looks to management for the solution.

This approach, said John Pastin, international representative of the steelworkers union, "is dancing on the periphery of reality." His union, like the automobile workers, electrical workers and others, claims to have a significant number of engineers in its membership.

The view that unionization is a "constructive irritant" not destined for great growth was expressed by Herbert Northrup, formerly with Ebasco Services, Inc., and now with Penn-Texas Corporation. He did not think an engineer loses professional status by joining a union but expressed the feeling that "the great bulk of engineers don't want the union approach," although the time has come for some changes.

However achieved, it was generally agreed that engineers are seeking, among other things, adequate and equitable compensation, effective job evaluation, individual recognition, two-way communications with management, and more opportunity for professional advancement.

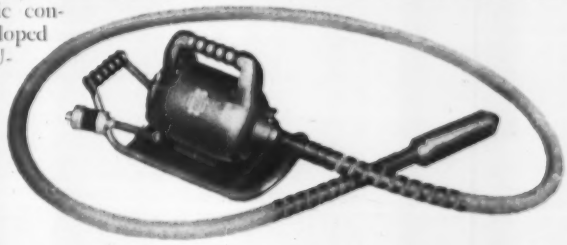
Trustees of Union Funds Consider Housing Project

A proposal for investment of union welfare and pension funds of New York City building trades in a $90-million, middle-income cooperative housing program was overwhelmingly endorsed in principle last week at a preliminary meeting of union and contractor representatives.

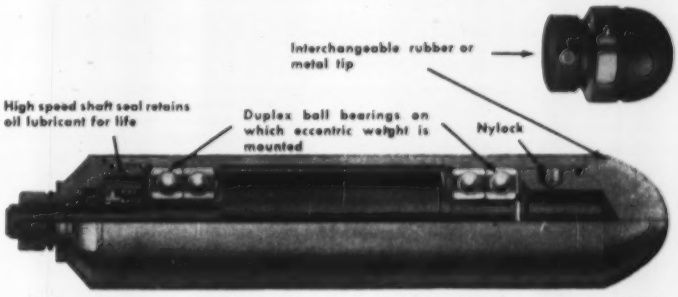
Exploratory in nature, the meeting afforded the joint trustees who handle the welfare and pension funds of union groups affiliated with the Building and Construction Trades Council an opportunity to discuss sponsorship of the New York housing proposal, originally presented by Robert Moses, City Construction Coordinator (ENR Jan. 19, p. 112).

New, rugged electric vibrator, newly designed vibrator head, delivers 9000 VPM at 2 HP

This new electric concrete vibrator, developed by STOW MANUFACTURING COMPANY, Binghamton, N.Y., features a new lightweight vibrator head that delivers, at high amplitude, 9,000 vibrations per minute to the mix.



This vibrator, STOW model BU, is powered by a totally enclosed 2 HP Universal motor operating on 155 volts, AC or DC, 25 to 60 cycles. The motor is protected by a skid mounting, so arranged that the unit can be easily pulled around by the flexible shaft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CONSTRUCTION MEN report that they like the light weight, the long life, the low replacement cost, and the terrific wallop of these heads. Weight of the 1¾" head is about 5 lbs.; the 2" head about 7½ lbs.; the 2½" head, about 9 lbs. The cost of this head is less than ¼ the cost of expensive "motor-built-in" type heads.

The 1¾" head is also available with a hard rubber tip for use where plywood forms are being used.

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Delaware River Port Authority Administration Building Camden, New Jersey

GENERAL CONSTRUCTION WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT BETWEEN SECOND AND FOURTH STREETS, PHILADELPHIA, PENNSYLVANIA TOLL PLAZA WALT WHITMAN BRIDGE CONTRACT NO. P-10A

Sealed bids will be received for GENERAL CONSTRUCTION WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT between Second and Fourth Streets, Philadelphia, Pennsylvania Toll Plaza, known as Contract No. P-10A, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M., (Eastern Standard Time), February 9, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $75,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business—either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
Joseph K. Costello,
Executive Director

January 12, 1956

Bids: February 9, 1956

Delaware River Port Authority Administration Building Camden, New Jersey

HEATING AND VENTILATING WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT BETWEEN SECOND AND FOURTH STREETS, PHILADELPHIA, PENNSYLVANIA TOLL PLAZA WALT WHITMAN BRIDGE CONTRACT NO. P-10C

Sealed bids will be received for HEATING AND VENTILATING WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT between Second and Fourth Streets, Philadelphia, Pennsylvania Toll Plaza, known as Contract No. P-10C, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M., (Eastern Standard Time), February 9, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $15,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO,
Executive Director

Bids: February 9, 1956

Delaware River Port Authority Administration Building Camden, New Jersey

ELECTRICAL WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT BETWEEN SECOND AND FOURTH STREETS, PHILADELPHIA, PENNSYLVANIA TOLL PLAZA WALT WHITMAN BRIDGE CONTRACT NO. P-10D

Sealed bids will be received for ELECTRICAL WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT between Second and Fourth Streets, Philadelphia, Pennsylvania Toll Plaza, known as Contract No. P-10D, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M., (Eastern Standard Time), February 9, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $50,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
Executive Director

Bids: February 8, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., Eastern Standard Time, the 8th day of February 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contracts:

For the Construction of a Maintenance Building right of Turnpike Station 1307+50, Lehigh County, near Township Road 810, Contract No. 561 and for the Construction of a Maintenance Building left of Turnpike Station 881+50, Luzerne County, at the Wyoming Valley Interchange, Contract No. 563. Each Contract Number will be bid separately.

The work to be performed under these contracts consists of the construction of a Maintenance Building at locations on the Turnpike listed above, not including, however, the plumbing, heating system, the electrical work, the general site grading, the paving or the seeding and sodding, except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 19 January 1956 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's Field Office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's Field Office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents for each location may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
11 January 1956

OFFICIAL PROPOSALS

Bids: February 14, 1956

Contract NYA-650.020

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CENTRAL HEATING AND
REFRIGERATION PLANT
INSTALLATION OF ABSORPTION
UNITS

Sealed proposals for installing absorption units in the Central Heating and Refrigeration Plant at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, February 14, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, January 26, 1956

Bids: February 21, 1956

Contract NYA-650.022

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CENTRAL HEATING AND
REFRIGERATION PLANT
INSTALLATION OF BOILERS

Sealed proposals for installing boilers in the Central Heating and Refrigeration Plant at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, February 21, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, January 26, 1956

Bids: February 14, 1956

Sewage Treatment Plant Improvements

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing materials and labor for constructing sewage treatment plant improvements for the Village of Greenfield, Ohio will be received by the Clerk of the Board of Trustees of Public Affairs in the Office of the Water and Light Department, Village Hall, Greenfield, Ohio, until twelve o'clock (12:00) Noon, Eastern Standard Time, February 14, 1956.

The work will be known as Sewage Treatment Plant Improvements—Contract No. 4—and includes the construction of screen chamber, Parshall flume, grit removal chamber, trickling filter, secondary clarifier, sludge digestion tank, sludge-drying beds, pumping facilities, outside piping, improvements to the existing primary clarifier and to the existing sludge digestion tanks, and all related appurtenances and piping.

Each proposal shall be addressed to the "Clerk of the Board of Trustees of Public Affairs, Village of Greenfield, Ohio," and endorsed "Proposal for Constructing Sewage Treatment Plant Improvements—Contract No. 4." Each proposal shall be accompanied by a certified check on a solvent bank drawn payable to the Treasurer of the Village of Greenfield, Ohio, or in lieu of a certified check bidders may furnish a bid bond satisfactory to the Village, in an amount equal to ten per cent (10%) of the bid price, said check to be forfeited to the Village of Greenfield, Ohio as liquidated damages in case of failure on the part of the successful bidder to execute the contract and furnish satisfactory surety bond within ten (10) days after acceptance of the Proposal.

The check will be returned to the successful bidder if the contract is executed and the necessary bond furnished within the specified time limit, and the checks of the unsuccessful bidders will be returned to them after the award is made.

The Board of Trustees of Public Affairs reserves the right to accept any bid or to reject all bids should the Board deem it to be for the best interests of the Village of Greenfield to do so.

Plans, specifications and form of proposal and contract may be obtained at the Office of Alfred LeFeber & Associates, Consulting Engineers, 2933 Woodburn Avenue, Cincinnati 6, Ohio, upon deposit of $20.00 for each set of documents so obtained. The full amount of the deposit for one set of documents and one-half the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the Village of Greenfield, Ohio, and who also returns the plans and specifications and additional sets in good condition to the Consulting Engineer within thirty (30) days after his bid security has been returned to him.

Equipment manufacturers, sub-contractors, and others who do not submit formal proposals to the Village of Greenfield, Ohio, will be refunded one-half (½) the amount of the deposit for all sets of complete documents including plans and specifications returned in good condition within thirty (30) days after the opening of bids. No refund will be made for documents received after this 30-day period.

BOARD OF TRUSTEES OF PUBLIC AFFAIRS
VILLAGE OF GREENFIELD, OHIO
by: William H. Shawhan, Clerk

Bids: February 14, 1956

Contract NYA-650.019

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CENTRAL HEATING AND
REFRIGERATION PLANT
SALE OF ABSORPTION UNITS

Sealed proposals for furnishing and delivery of absorption units for the Central Heating and Refrigeration Plant at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, February 14, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, January 26, 1956

OFFICIAL PROPOSALS

Bids: February 14, 1956

Aerial Outfall Sewer

ADVERTISEMENT FOR BIDS

Sealed bids or proposals for furnishing materials and labor for constructing an aerial outfall sewer for the Village of Greenfield, Ohio will be received by the Clerk of the Board of Trustees of Public Affairs in the office of the Water and Light Department, Village Hall, Greenfield, Ohio, until twelve o'clock (12:00) Noon, Eastern Standard Time, February 14, 1956.

This work which will be known as Contract No. 3—Aerial Outfall Sewer, includes sanitary sewers, manholes, chambers and appurtenances.

Proposals shall be addressed to the Clerk of the Board of Trustees of Public Affairs of the Village of Greenfield, Ohio and endorsed "Proposal for Constructing Extension to the Sewerage System for the Village of Greenfield, Ohio."

Each proposal shall be accompanied by a certified check on some solvent bank, drawn payable to the Treasurer of the Village of Greenfield, Ohio, in an amount equal to (10%) per cent of the price bid, such check to be forfeited to the Village of Greenfield as liquidated damages in case of failure on the part of the successful bidder to execute a contract and furnish satisfactory surety bond within (10) days after the acceptance of the proposal. In lieu of a certified check bidders may furnish a bid bond satisfactory to the Village.

The check of the successful bidder will be returned if the contract is executed and the necessary bond furnished, and to the unsuccessful bidder after award is made.

The Board of Trustees of Public Affairs reserves the right to accept any bid or to reject all bids should it deem it to be for the best interests of the Village of Greenfield to do so.

Plans, specifications and form of proposal and contract may be obtained at the office of Alfred LeFeber & Associates, Consulting Engineers, 2933 Woodburn Avenue, Cincinnati 6, Ohio, upon deposit of $10.00 for each set of documents so obtained. The full amount of the deposit for one set of documents and one-half of the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the Village of Greenfield, Ohio and who also returns the plans (and specifications on additional sets) in good condition to the Engineer within thirty (30) days after the bid security has been returned to him.

Equipment manufacturers, sub-contractors, and others who do not submit formal proposals to the Village of Greenfield, Ohio, will be refunded one-half (½) the amount of the deposit for all sets of complete documents including plans and specifications returned in good condition within thirty (30) days after the opening of bids. No refund will be made for documents received after the thirty (30) day period.

BOARD OF TRUSTEES OF PUBLIC AFFAIRS
VILLAGE OF GREENFIELD, OHIO
by: William H. Shawhan, Clerk

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4613) will be received at Madras, Oregon, until February 28, 1956, for furnishing labor and materials for construction of Haystack Dam, Deschutes Project, Oregon. Location near Madras, Oregon, in Jefferson County. Principal items are 650,000 cu. yds. excavation; 533,000 cu. yds. earthfill in embankments; 1,610 cu. yds. concrete; and other work. Completion time 600 days. For particulars, address Bureau of Reclamation, Madras, Oregon; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4614) will be received at Denver, Colorado, until March 1, 1956, for furnishing two 69-kv (350-kv BIL), 1,200-ampere, 2,500,000-kva, power circuit breakers, suitable for switching shunt capacitors for Folsom-Elverta Terminal Switching Facilities, Central Valley Project, California. Delivery is desired within 180 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: February 21, 1956

Contract NYA-650.021

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CENTRAL HEATING AND
REFRIGERATION PLANT
SALE OF BOILERS

Sealed proposals for furnishing and delivery of boilers for the Central Heating and Refrigeration Plant at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, February 21, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, January 26, 1956

Bids: February 8, 1956

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m. Eastern Standard Time, the 8th day of February 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contracts:

For the Construction of Heating System for the Slatington Maintenance Building at Turnpike Station 1307+50, Lehigh County, Contract No. 561-B and the Construction of Heating System for the Wyoming Valley Maintenance Building at Turnpike Station 881+50, Luzerne County, Contract No. 563-B. Each Contract Number will be bid separately.

The work to be performed under these contracts is generally in and around the Maintenance Building at locations on the Turnpike listed above. The work does not include the Electrical System, the Plumbing System nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 19 January 1956 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's Field Office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's Field Office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents for each location may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE
COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
11 January 1956

Bids: February 14, 1956

City of Richmond, Virginia

NOTICE TO BIDDERS
City of Richmond, Virginia

Sealed proposals will be received at the office of the City Purchasing Agent, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A. M., E.S.T., February 14, 1956, at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part:

Type of Work: The work to be done is part of the Sewage Disposal Project, is entitled "Division I—Grit Chamber and Sedimentation Tanks", and comprises the furnishing of all labor, materials, equipment and work incidental thereto for the construction of the Grit Chamber and Sedimentation Tanks, as shown, specified and directed.

Location: The Grit Chamber and Sedimentation Tanks will be located at the site of the Sewage Treatment Plant, adjacent to the southwest bank of the James River at Rockett's Wharf, northeast of the United States Naval Diesel School, in the City of Richmond, Virginia.

The proposal and other contract documents may be examined at the office of the Director of Public Works, 217 Governor Street, Richmond, Virginia and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of the contract documents may be obtained from the office of the Director of Public Works, upon the deposit of Twenty-Five Dollars for each set. Any general contractor who submits a bonafide bid on the project will be refunded his payment in full for not more than three sets, and will be refunded Fifteen Dollars per set for each additional set. All others will be refunded Fifteen Dollars per set upon the return of the documents in good condition within ten days after the opening of the bids.

J. W. Huffman
City Purchasing Agent

Bids: February 9, 1956

Delaware River Port Authority
Administration Building
Camden, New Jersey

PLUMBING WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT BETWEEN SECOND AND FOURTH STREETS, PHILADELPHIA, PENNSYLVANIA TOLL PLAZA WALT WHITMAN BRIDGE
CONTRACT NO. P-10B

Sealed bids will be received for PLUMBING WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT between Second and Fourth Streets, Philadelphia, Pennsylvania Toll Plaza, known as Contract No. P-10B, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P. M., (Eastern Standard Time), February 9, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $10,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT
AUTHORITY
Joseph K. Costello,
Executive Director

January 12, 1956

Bids: February 14, 1956

Contract NYA-650.027

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
INTERNATIONAL ARRIVAL BUILDING
AND AIRLINE WING BUILDINGS
HYDRAULIC ELEVATORS

Sealed proposals for furnishing and installing three hydraulic elevators for the International Arrival Building and Airline Wing Buildings to be erected in the Central Terminal Area of New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, February 14, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, January 26, 1956

CONTRACTORS
WATCH
THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: February 2, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 2nd day of FEBRUARY 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

Contract No.	County	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.						
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
DISTRICT No. 4, B. F. Perry, Acting District Engineer, Barge Canal Terminal, Rochester, N. Y.						
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
T.U.B. 56-1E	Westchester, Rockland, Orange, Ulster, Greene, Albany, Schenectady, Montgomery, Herkimer, Oneida, Madison, Onondaga, Cayuga, Seneca, Ontario, Monroe, Genesee and Erie	New York State Thruway—Southern Westchester Connection Hudson, Catskill, Mohawk and Ontario Sections at 40 Toll Plazas	....	Electrical Facilities & Associated Items for Expansion of Existing Toll Facilities	$1,250 Plans $10	$23,000
T.T.B. 56-1	Rockland, Greene, Oneida, Onondaga, Ontario, Genesee, and Erie	New York State Thruway—Hudson, Catskill, Mohawk and Ontario Sections at Toll Plazas	....	Paving and Misc. Work for Expansion of Existing Toll Facilities	$3,500 Plans $10	64,000
NOTE: Plans and proposals for the above two contracts will be distributed only from our Albany and New York City Offices but may be examined at each district office where the work is located.						
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
M.T. 56-1	Montgomery	New York State Thruway Mohawk Section—Sub. 12C (Caroga Creek-Fort Plain)	....	Drainage Basin With Side Gates & Misc. Work	$220 Plans $10	4,000
DISTRICT No. 4, B. F. Perry, Acting District Engineer, Barge Canal Terminal, Rochester, N. Y.						
R.C. 56-4	Monroe	Parma Corners-Spencerpt-North Chili, S. H. 495	0.02	Corrug. Plate Pipe Culvert and Misc. Work	$500 Plans $10	9,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
E.T. 56-1 E.T.C. 56-2 FAET 56-3 FAST 56-1 S.T. 56-2	Erie	New York State Thruway—Erie Section—Sub. E-8-C (Abbott Road to Cazenovia Creek); Four Secondary Cross or Marginal Roads Proj. C-1072(3)	2.35 (4.15) (Acc.)	9 Two Cse. Cem. Conc. Pavt. 2 @ 25' Wide = 2.59 Mi. (Two Cse. Cem. Conc. Pavt. on Ramps = 2.54 Mi.) Asp. Conc., Opt. = 1.35 Mi. Misc. Work = 0.02 Mi. 3 Hy. Sups. Comp. I-Beams 1 @ 163.8', 1 @ 224.5' & 1 @ 168.7' 1 RR Sup. Comp. Pl. Girder 570' 1 Br. Comp. Pl. Girder 95.5'	$350,000 Plans $50	6,179,000
FAET 56-4 FARC 56-2	Erie	New York State Thruway—Erie Section—Sub. E-8-D (Cazenovia Creek-Clinton Street); Aurora-Buffalo Pt. 1, S. H. 128 Proj. C-1072(4)	4.19 (0.23) (Acc.)	9 Two Cse. Cem. Conc. Pavt. 2 @ 25' Wide = 3.67 Mi. 9" Cem. Conc. Pavt. Var. Wide = 0.48 Mi. Asp. Conc. Pavt., Opt. = 0.23 Mi. Misc. Work = 0.04 Mi. 2 Br. Comp. Plate Girders 355.9' and 358' 4 Hy. Sups. Comp. I-Beams 156.7', 202.9', 166.7' and 134.9' 1 RR Sup. Comp. I-Beam 520.5'	$427,000 Plans $100	7,772,000
E.T. 56-5 E.T.C. 56-6 S.T. 56-5 R.C. 56-3	Erie	New York State Thruway—Erie Section—Sub. E-8B (Bayview Rd. to Abbott Rd.); Athol Springs-Orchard Park Pt. 2, S. H. 1586 and 2 Secondary Cross Roads	3.70 (2.34) (Acc.)	9" Two Cse. Cem. Conc. Pavt. 2 @ 25' Var. Wide = 4.16 Mi. (Two Cse. Cem. Conc. Pavt. on Ramps = 1.45 Mi.) Asp. Conc., Opt. = 0.39 Mi. Misc. Work = 0.04 Mi. 2 Hy. Sups. Plate Girders 247' and 245.5' 4 Hy. Sups. Comp. I-Beams 282.8', 266.8', 272.3' & 276' 2 RR Sups. Comp. I-Beam 71' and 196.2'	$300,000 Plans $100	5,584,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
TSPRC 56-1	Columbia and Dutchess	Taconic State Parkway Sec. 7, Pt. 3; Sec. 8; Sec. 9A, Pts. 1-2; Sec. 9B, Pt. 1	12.29	Washout Repairs and Misc. Work	$5,000 Plans $10	92,000
NET 56-1 FANET 56-2 ST 56-3 FAST 56-4 RC 56-1	Westchester	New York State Thruway—New England Section—Sub. NE3 (Chatsworth Ave.-Mamaroneck Ave.); Weaver St., Pt. 1, S. H. 1645 and 7 Secondary Cross Roads Project F-1068(10)	2.49 (3.05) (Acc.)	9 Cem. Conc. Pavt. 2 @ 37' Var. Wide = 4.59 Mi. Asp. Conc., Opt. = 0.95 Mi. 8 Hy. Sups. Comp. I-Beam 107.5', 110.2', 109.3', 107', 112.3', 124.5', 120.3' and 202.7' 1 RR Sup. Comp. I-Beam 55.3' 4 Brs. Conc. Boxes 36', 36', 36' & 54'—	$475,000 Plans $100	8,573,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: February 16, 1956

Power Authority of The State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF INTAKE GATE HOISTS FOR BARNHART ISLAND POWER PLANT
SPECIFICATIONS NO. PA-5-15052
ST. LAWRENCE CONTRACT NO. P-34

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the manfacture and furnishing of forty-eight (48) Intake Gate Hoists for Barnhart Island Power Plant and delivery thereof f. o. b. destination in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A. M. Eastern Standard Time on the 16th day of February, 1956, 270 Broadway, Hearing Room C on the sixth floor, New York 7, New York.

(2) If mailed in, until 10:15 A. M. Eastern Standard Time, on the 16th day of February, 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for forty-eight fixed hoists and accessories.

Bids will not be restricted to American manufacturers.

Plans, specifications and proposal forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall and Rich, 220 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 626 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Twenty ($20.00) dollars per initial set of contract documents and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the gross sum bid in the bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: February 22, 1956

Broward County, Port Authority, Florida

Sealed bids will be received until February 22nd, 1956 for dredging and disposal of 233,000 cubic yards of unclassified materials from area adjacent to existing turning basin at Port Everglades. For particulars address Broward County, Port Authorities, Ft. Lauderdale, Fla. R. T. Spangler, Port Manager.

OFFICIAL PROPOSALS

Bids: February 2, 1956

Wild Creek Gravity Water Supply System

Notice to Contractors

BETHLEHEM AUTHORITY
BETHLEHEM, PENNSYLVANIA

Penn Forest Dam and
Reservoir and Appurtenant Work
Contract No. 1

Sealed proposals addressed to Bethlehem Authority, 6 West Broad Street, Bethlehem, Pennsylvania for construction of Penn Forest Dam and Reservoir and Appurtenant Work in connection with the Wild Creek Gravity Water Supply System will be received at the office of Bethlehem Authority, 6 West Broad Street, until one o'clock P.M., Eastern Standard Time on the second day of February, 1956, at which time and place they will be publicly opened and read.

The work under this contract will consist of the construction of a dam and reservoir on Wild Creek approximately 2.4 miles upstream from the present dam and will include all clearing, grubbing and stripping; excavation; rolled embankment; rock embankment; concrete masonry for spillway and wasteway channels, cut-off walls, intake tower and valve chambers, stream control conduit, water supply pipe tunnel; slope paving; and other structures; drilling and grouting; rip rap; piping and valves; sluice gates; roadways and parking areas; stream relocation and all appurtenant operations and equipment.

Plans and Specifications, Form of Contract and Bidding Blanks are on file and open to public inspection at the office of Bethlehem Authority, 6 West Broad Street, Bethlehem, Pennsylvania, or at the office of Morris Knowles Incorporated, Engineers, 1312 Park Building, Pittsburgh, Pennsylvania. The plans and specifications may be obtained at either of said offices for use in preparing a bid upon deposit of Fifty Dollars ($50.00) for each set. If the plans and specifications are returned in good condition within a period of two weeks after the date set for opening of Bids, the full amount of the deposit for one set will be refunded to each actual bidder. Other deposits will be refunded with a deduction of Twenty-Five Dollars ($25.00) for each set of plans and specifications to defray the actual cost of reproduction. If the plans and specifications are not returned within the time stated, the entire amount of the deposit will be forfeited.

No bid may be withdrawn during a period of sixty (60) days after the scheduled closing time for receipt of bids.

The right to waive any informality in any bid; to accept any bid; or to reject any or all bids, is reserved by Bethlehem Authority, Bethlehem, Pennsylvania.

Each proposal shall be accompanied by a certified check, bank treasurer's check, or cashier's check, in an amount not less than ten per cent (10%) of the total of the bid submitted, in the form and subject to the conditions provided in the Information for Bidders. The bidder to whom a Contract is awarded will be required to furnish, for the faithful performance of the work thereunder, an approved Surety Company performance Bond in an amount equal to 100 per cent (100%) of the total of the bid submitted, and a separate approved Surety Company Labor and Materialmen's Bond in an amount equal to 50 per cent (50%) of the total of the bid submitted.

BETHLEHEM AUTHORITY
BETHLEHEM, PENNSYLVANIA
By: W. R. Coyle, Chairman
Robert L. Fox, Executive Director
and Chief Engineer
MORRIS KNOWLES INCORPORATED,
Engineers

January 5, 1956

Bids: February 8, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., Eastern Standard Time, the 8th day of February 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contracts:

For the Construction of Electrical System for the Slatington Maintenance Building at Turnpike Station 1307+50, Lehigh County, Contract No. 561-C and the Construction of Electrical System for the Wyoming Valley Maintenance Building at Turnpike Station 881+50, Luzerne County, Contract No. 563-C. Each Contract Number will be bid separately.

The work to be performed under these contracts is generally in and around the Maintenance Building at locations on the Turnpike listed above. The work does not include the Plumbing System, the Heating System nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 19 January 1956 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's Field Office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's Field Office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents for each location may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
11 January 1956

Bids: February 1, 1956

Power Authority of The State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF
440 V. MOTOR CONTROL CENTERS
AND APPURTENANCES
SPECIFICATIONS NO. PA-5-14009
ST. LAWRENCE CONTRACT NO. P29

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture and furnishing of forty-one (41) 440 v. motor control centers and delivery thereof f.o.b. destinations, in the following ways:

(1) If brought in person on the day of receiving bids, until 10:30 A. M. Eastern Standard Time on the 7th day of February, 1956, Hearing Room C on the 6th floor, 270 Broadway, New York, New York.

(2) If mailed in, until 10:15 A. M. Eastern Standard Time on the 7th day of February 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above. Bids will be entertained for the forty-one (41) 440 v. motor control centers and associated equipment and services in accordance with the bidding schedule. Erection at the site of installation will be done by others but services of an erecting engineer shall be provided by the manufacturer if and when required. Delivery of the equipment will be required starting April 1, 1956.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-14009

Bids: February 8, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., Eastern Standard Time, the 8th day of February 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contracts:

For the Construction of Plumbing System for the Slatington Maintenance Building at Turnpike Station 1307+50, Lehigh County, Contract No. 561-A and the Construction of Plumbing System for the Wyoming Valley Maintenance Building at Turnpike Station 881+50, Luzerne County, Contract No. 563-A. Each contract number will be bid separately.

The work to be performed under these contracts is generally in and around the Maintenance Building at locations on the Turnpike listed above. The work does not include the Electrical System, the Heating System nor building construction except as noted in the specification or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 19 January 1956 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's Field Office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's Field Office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents for each location may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
11 January 1956

Read the Official Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

Bids: March 13, 1956

Power Authority of The State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
ELECTRICAL WORK AT THE
BARNHART ISLAND POWER PLANT
NEAR MASSENA,
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATION NO. PA-5-14030
ST. LAWRENCE CONTRACT NO. 25

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the electrical work at the Barnhart Island Power Plant near Massena, St. Lawrence County, New York, in the following ways:

(1) If brought in person on the day of receiving bids, until 10:30 AM Eastern Standard Time on the 13th day of March 1956, 270 Broadway, Hearing Room C on the 6th floor New York, New York.

(2) If mailed in, until 10:15 AM Eastern Standard Time on the 13th day of March 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above.

The work includes but is not limited to the installation of Authority furnished equipment consisting of generator auxiliaries, isolated phase bus, transformers, load and motor control centers, control boards, lighting, and wire and cable; the furnishing and installing of miscellaneous electrical equipment, exposed conduit and grounding, crane conductors, and cable trays; and making electrical connections to equipment of a basically non-electrical nature such as pumps, compressors, heating, ventilating and air conditioning, hoists and fire protection equipment.

The work shall be completed on or before December 1, 1959.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Twenty-five ($25.00) dollars per initial set and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-14030

Bids: January 30, 1956

Board of Education Bureau of Construction

Notice Re Prequalification Forms For Contractors

NOTICE IS HEREBY GIVEN THAT THE Director, of the Bureau of Construction, 4th Floor, 42-15 Crescent Street, Long Island City 1, New York, will receive applications for prequalification of bidders, from contractors who may wish to submit bids for the proposed hereinafter specified contracts, as follows:

For General Construction, Plumbing & Drainage, Heating & Ventilating, Electrical Work & Lighting Fixtures for P. S. 111, Manhattan, West 51st Street and 10th Avenue.

Prequalification application forms will have to be secured from and must be submitted to the Director Bureau of Construction Office, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised will be received from prequalified bidders only.

The time for submitting prequalification application forms for the above contract will expire on Monday, January 30, 1956.

WILLIAM H. CORREALE
Director
Dated: January 11, 1956.

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Experienced Bridge Construction Superintendent please submit work history and references preliminary to interview, location: Maryland. P-8922, Engineering News-Record.

Administrative Civil Engineer, over 45. P.E. with a background in municipal engineering and specific experience in sewer design and drainage. Must be able to handle administration and personnel problems. Salary $8,400 per year and up. Location Southeastern Michigan. Furnish experience record and references, well detailed. P-8880, Engineering News-Record.

Civil Engineer graduate at least 35, with minimum 5 years municipal engineering. Capable design of sewers and small sewage treatment plants. Salary open. Location Southeastern Michigan. Furnish experience record and references. P-8885, Engineering News-Record.

Engineers one or two years experience in structural design or recent graduates. Consulting engineers office Newark, N. J. Give education, experience and salary. P-8890, Engineering News-Record.

Electrical, Civil, mechanical engineers by consultant on buildings, bridges, highways. Box 121, Station H, Toledo, Ohio. Replies acknowledged.

Heavy Construction Superintendent considerable experience heavy concrete work, sewerage & waterworks construction, general heavy underground work in N. Y. State. Must be thoroughly competent, able to assume responsible position. Engineering background preferred. Start immediately. Permanent position with advancement for qualified person. P-8926, Engineering News-Record.

Superintendent for earth moving and rock excavation to be located in New York and neighboring states. Must be experienced with all phases of earth moving. Salary open. P-8845, Engineering News-Record.

Wanted—Superintendent for all phases Asphalt Construction in Arkansas. Experience in hot asphalt plant operation necessary. Apply in own handwriting for interview. Salary open. Write Asphalt Division P.O. Box 2660, Little Rock, Ark.

Draftsmen — Career opportunities available for two experienced structural steel or ornamental metal detailers and checkers. Desirable working and living conditions. Give full information as to experience and expected remuneration in reply. The J. T. Edwards Co. 1241 McKinley Avenue, Columbus, Ohio.

Superintendent wanted by concrete and asphalt paving contractor in Maryland—Virginia—D.C. area. Unusual opportunity. P-8735, Engineering News-Record.

Civil Engineers for design of structural steel and reinforced concrete. Experience desirable. D. B. Steinman, 117 Liberty St., New York 6, N. Y.

Wanted: Bridge & Highway designers with office and field experience by consulting engineering firm in Pennsylvania. Give complete details and salary desired. P-8381, Engineering News-Record.

Wanted designer or detailer experienced preparation of plans for sewage pumping station, sewage treatment plant and kindred projects. Permanent position with established consulting engineer in Southeast. Excellent opportunity for advancement. Please furnish experience record, training, salary desired, telephone number, etc., in first response. Replies confidential. P-9019, Engineering News-Record.

Graduate Civil Engineer—Design Engineer for progressive West Texas City of 55,000, salary $400 to $500 depending on qualifications. Apply to City Engineer, P.O. Box 3466, Odessa, Texas, giving complete background, references, etc.

POSITIONS VACANT

Graduate Engineers under 30: with military service completed. Excellent opportunities in both field and office for training and rapid advancement. Starting salaries dependent upon experience. Send complete information and recent photograph. Daudlinger & Sons Const. Co., P.O. Box 2033, Wichita, Kansas.

The City of Cedar Rapids, Iowa, is accepting applications for the position of a Public Health Engineer. Age, 23–50 years. Qualifications—Degree of Civil Engineering from an accredited school of engineering. Salary $450–$525 per month, depending upon your experience and background. Applications must be returned by April 1, 1956. Applications may be obtained by writing the Civil Service Commission, City Hall, Cedar Rapids, Iowa.

Superintendent Wanted by large New York heavy construction company. State your experience, education, age, health, and references. Must be willing to work anywhere in the U.S. east of the Mississippi River. Adequate salary, plus travel and living allowance when away from home. We are interested only in a man who still wants to and can get somewhere. P-8983, Engineering News-Record.

Registered Civil and Structural Engineers with administrative experience for work in central states. Please give complete resume of experience and education. Reply to P-9044, Engineering News-Record.

Engineers for design and construction supervision on roadways. Projects in central part of U.S. In reply give age, education, detail of experience, professional qualifications, salary requirements and three references. Reply to P-9045, Engineering News-Record.

Four Salesmen: To sell concrete form accessories and tubular scaffolding—in Chicago, New York, Houston & Los Angeles. Must be experienced and thoroughly acquainted in area. Protected territory. Liberal commission against guaranteed draw. Give full details. Confidential. This is the chance of a lifetime for right man. Write P-9039, Engineering News-Record.

Traffic & Safety Engineer: City of Reno, Nevada. Requirements: Sound technical knowledge and experience in: traffic design, survey methods and techniques, traffic control measures, traffic planning. Ability to formulate, present and execute safety program for city employees in all departments. Salary to be determined. Mail complete resume of education and experience to City Manager, P.O. Box 7, Reno, Nevada.

Wanted—Construction Engineer and instrument man for heavy construction layout in Philadelphia. P-9041, Engineering News-Record.

Wanted—Young graduate civil engineer, under 35 years of age, for position in Engineering Corps, Maintenance of Way Department, Erie Railroad Company, headquarters at Salamanca, N. Y. Railroad experience desirable but not essential. Good opportunities for advancement. Starting salary $4530 annually. Give full information in first letter. Address applications to Mr. L. Rossman, Division Engineer, Erie Railroad Company, Salamanca, N. Y.

Engineer-Estimator—Familiar with highway procedures, practices and administration. Position in office of progressive general contractor in Central Ohio. Permanent and immediate. P-9043, Engineering News-Record.

Architectural representative for Metropolitan New York. Large building material concern desires young man. Construction background desirable. P-9042, Engineering News-Record.

POSITIONS WANTED

Heavy Duty Truck Driver Foreman, or Driver Semi, Dirt. Desire foreign work in heavy construction. 15 years overseas. 12 to 18 months contract. Good health, habit, employment record excellent. Phone 3-6905, Wire, write John English, 47 Ormond Avenue, West Asheville, N. C.

Available Foreman, drilling, blasting, operations excavation, placing concrete, thoroughly experienced. References. PW-8807, Engineering News-Record.

(Continued on page 112)

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

NATIONAL COVERAGE

Positions Vacant | **Civil Service Opportunities . . .** | **Employment Agencies**
Positions Wanted | **Selling Opportunities Wanted** | **Employment Services**
Part Time Work | **Selling Opportunities Offered** | **Labor Bureaus**

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An advertising inch is measured ⅞" vertically on a column—3 columns—20 inches to a page.
Subject to Agency Commission.

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Box Numbers counts as 1 line.
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Not subject to Agency Commission.

Send NEW ADS to ENGINEERING NEWS RECORD, 330 W. 42nd St., N. Y. 36, N. Y. for February 9th issue closing January 30th

ENGINEERS

HIGHWAYS AND BRIDGES

Designers
Draftsmen
Office Engineers
Maintenance Engineers
Project Engineers
Location Engineers
Soils & Materials Engineers

Domestic and Overseas Assignments
Knowledge of Foreign language necessary in some classifications.

ARCHITECTS

Architectural Draftsman

Write, giving full particulars concerning education, experience, personal history and availability to:

Richard L. Shaw
Personnel Director

Michael Baker, Jr., Inc.
Consulting Engineers
Baker Building **Rochester, Penna.**

DESIGN ENGINEERS

CIVIL-Graduate, with minimum of 3 years experience in design of highways, streets, drainage or sanitary works.

STRUCTURAL-Graduate, with minimum 3 years experience in design of heavy engineering construction.

DESIGN DRAFTSMAN-Minimum 2 years experience in highway or heavy structural engineering projects.

COMPANY PAID HOSPITALIZATION, LIFE INSURANCE, RETIREMENT PLAN, AND VACATIONS.

SEND RESUME, REFERENCES, AND SALARY REQUIREMENTS TO:

PALMER AND BAKER, INC.
Consulting Engineers
P. O. Box 346 **Mobile, Alabama**

WANTED:
YOUNG ENGINEER

Preferably civil engineering graduate—by large northern Ohio building supply company. Experience not necessary. Send full information as to experience, education, etc.

P-8832 Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

OPPORTUNITIES
ENGINEERS–CIVIL

To make property surveys and structural cost estimates. Knowledge of railroad construction desirable, but not essential. Several openings. Steady and secure employment, liberal sick leave, vacation, 40 hour work week, 12 paid holidays per year, group insurance at reduced rates, modern pension system, merit system promotions. Ideally located to several colleges and universities.
Salary range $4200 to $5100.
Send or bring history of education and experience, as well as references to:
Department of the Treasury,
State of New Jersey,
Administrative Division,
State House, Trenton 25, New Jersey.

MECHANICAL DESIGN ENGINEERS

OVERSEAS

Openings for top-flight Designers. Minimum 5 to 10 years in mechanical design. Degree preferred but not essential.

Rush Resume:

P-9051, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Excellent opportunity with one of Delaware Valley's leading engineering and construction companies specializing in Industrial Construction.

Must be thoroughly experienced in all phases of construction, capable of handling several jobs concurrently. Must be cost and system conscious. Must have proven administrative ability. Engineering background desirable.

Interview by appointment only. Write complete information including training, experience, salary and recent photograph to E. I. Troiani.

ROBERT LAMB & SON, INC.
3429 W. Indiana Ave. **Phila. 32, Pa.**

WANTED
Engineer, Sewer Foremen, & Supt.

for large Sewer Project in Pittsburgh, Pa. Area. Send Qualifications and Experience etc.

P-8904, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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PIPING and MECHANICAL
PERMANENT EMPLOYMENT IN NEW ORLEANS AND PENSACOLA
de LAUREAL & MOSES, Inc.
Consulting Engineers
201 Nola Building **TU 8701**

POSITIONS WANTED (Cont'd from page 111)

Cofferdam, piling Supt. Age 35. Consider foreign assignment. Know men, methods, equipment and costs. Best of reference. PW-8850, Engineering News-Record.

Construction Manager-Superintendent mechanical trades. 20 years experience in power houses, chemical plants-process piping. Administration, sales, estimating. Engineering background. Have large following men and superintendents. Best of references. PW-8556, Engineering News-Record.

Structural Engineer, graduate, 30 years, subways, buildings, docks, power plants, chemical plants, available for responsible position. PW-8907, Engineering News-Record.

Chief Estimator, project manager, construction executive, available for association with active, competitive general contractor. Proven profitable record for 15 years. Salary bracket $15,000 per year. PW-8855, Engineering News-Record.

Construction Executive, buildings and heavy construction, sound experience bid to completion, qualified to manage a project, branch office or a business, seeks new connection where top man is required. Minimum $15,000. PW-8792, Engineering News-Record.

Experienced commercial and industrial building estimator, registered professional engineer, age 39, married, desires connection with general contractor. Middle West or Rocky Mountain location preferred. Available immediately. State location of work, salary range possible, other conditions, in first letter. PW-9013, Engineering News-Record.

Superintendent of construction at present in charge of erection of large atomic reactor, will be available on completion for re-engagement in similar field. Competent to take charge of project domestic or foreign. Write PW-9017, Engineering News-Record.

Construction Engineer—25 years experience. Presently employed as chief engineer and head stimator for nationally known heavy construction firm. Familiar all phases of construction both home office and field. Permanent position desired in any part of country and will consider foreign. Resume and references on request. PW-9022, Engineering News-Record.

Sewer Superintendent or Foreman, aggressive resourceful, extensively experienced in sewerage and drainage construction of interceptors and laterals; desires permanent connection with ambitious, consistent contractor. PW-9007, Engineering News-Record.

Bridge Engineer, BSCE, MCE, licensed, desires association with growing consulting engineer firm. Experienced all phases of design, including movable bridges. 5 years responsible administrative experience. Willing to invest. PW-8989, Engineering News-Record.

Construction Engr. Reg. Prof. Engr. C.E. Grad. 22 years const. experience, 12 of which as supt. of const. Experience 60% heavy 10% industrial & building. Age 42. PW-8987, Engineering News-Record

Heavy Construction Estimator, Sales Engineer, P.E. for contractor, consultant or service organization involved in excavation, foundations, concrete structures. Extensive contracting background. Accustomed to responsibility. PW-8960, Engineering News-Record.

Construct. Supt. or general foreman. 30 yrrs. experience on large dirt moving project with all types equipment. Heavy foundations, bridge piers, sewers and roads. PW-8979, Engineering News-Record.

Available at once estimator for all types commercial and private construction, 27 yrs. experience, can make complete estimate including pricing. Go anywhere if proposition is attractive. PW-8957, Engineering News-Record.

Construction Executive. Civil engineer graduate; registered; 38; married. Extensive experience in administration and superintendency of medium and large-scale building projects. Desires responsible position as construction manager or executive with future potential. PW-8961, Engineering News-Record.

Construction Engineer—Attorney—Pilot. BS & LLB, 6 yrs. experience as project engr., contact & trial attorney with U.S. Corps of Engineers, and commercial pilot, 33 yrs. old, desires association with construction and/or eng. company. PW-8967, Engineering News-Record.

Supt: Road Construction. Age 39. 21 years experience, heavy grading, sub-base, bituminous and concrete paving. Engineering background. Prefer location in South. PW-9040, Engineering News-Record.

Fire Protection and Safety director, 34, 11 yrs. exp., 6½ yrs. Atomic Energy Safety. B.S. in F.P.E., I.E.; Navy DD Eng. Off. PW-9038, Engineering News- Record.

CONSTRUCTION EQUIPMENT ENGINEER
(Supervisory)

Graduate engineer with minimum 7 years' experience designing, selecting, specifying and/or supervising operations of construction equipment, such as crawlers, rubber-tired tractors, shovels, cranes, air compressors, welding machines, pumps, mixers, spreaders, fork lifts, etc.

To consult with manufacturers and suppliers on selection and modification of the above-mentioned equipment. For company's Equipment Engineering Division located in New York City. Salary good; liberal benefits.

Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 89

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For Foreign Assignment

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Excellent overseas salaries and allowances plus free food and lodging.

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Contact Commissioner of Personnel 31 Light St., Baltimore 2, Md. All applications must be submitted by Feb. 1.

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Recent design experience on petroleum refineries or chemical plants. Assignments require thorough knowledge of heat exchangers, pumps, piping layouts, specification work and analysis of bids.

DESIGNERS
PIPING

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SAN FRANCISCO or NEW YORK ENGINEERING OFFICES

BECHTEL
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Send Resume:

5 West 45th St., New York 17, N. Y.
220 Bush St., San Francisco, Calif.

Confidential interviews can also be obtained at: Scanlon Building, Houston, Texas, or Roosevelt Building, Los Angeles, California

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Requires Resident Manager
Earnings can exceed $2,000 a month, please do not apply unless:

1—You have a degree in either Civil, Mech., or Elect. Engrg. or Architecture.

2—You have at least 15 years' experience in one or more of the above fields.

3—You consider yourself qualified to supervise a staff including designers, inspectors and surveyors on the construction of an air field and appurtenances.

4—You are willing to forego family living during 1956.

5—You have the character and personality to maintain satisfactory relationship with client, contractor and employees.

6—You are a U. S. citizen who can be cleared for Secret.

P-8936, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

STRUCTURAL ENGINEER

Structural steel designer and estimator for industrial buildings and miscellaneous steel structures. Applicant should be graduate engineer, preferably 35-45 years old, with a minimum of 5 years of actual structural steel design experience. Permanent employment with top pay, paid vacations, group insurance plan, pension plan. Excellent opportunity. Location is in Mid-West. Employer is nationally known, well established steel fabricator.

Reply fully, giving resume of experience, education, age and salary requirements to

P-8946, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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Designers Detailers Draftsmen
for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY
PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE
INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

Howard, Needles, Tammen & Bergendoff
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Interested people are invited to call in person or write to R. R. Haarlow:

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College graduates with minimum 6 years' work experience in industrial engineering, cost analysis or related activities. To provide industrial engineering services ranging in scope from shop layout to organizational changes in major oil producing operations.

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Having experience with heavy material handling equipment

Permanent Position For Qualified Men

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Chief Engineer for interview

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(On overseas Airbase Mail Detailed Resume.)

P-8825, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Water Treatment and Industrial and Sanitary Waste Treatment Experience

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BACK HOES
1¼ up to 2½ Yd.
Late Model Machines
ANDERSON EQUIPMENT COMPANY
Box 1737, Pittsburgh 30, Penna.
Phone: LEhigh 1-6020

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8' x 80'
OR LARGER
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1—Model 6 Northwest Pullshovel & Crane
1—Model 80-D or 95 Northwest Pullshovel & Crane
1—D-6 Cat. End Loader
1—40 Ton Rogers Trailer & Tractor (low Bed)
2—315 Cu. Ft. Compressors
UNITED FOUNDATION CORP.
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Murdock 6-4257

WANTED
Bucket, Dragline 2½-3 Yd.
Grader, Model 112 or Equal.
Roller, Tandem 5-8 Ton.
ANDERSON EQUIPMENT CO.
Box 1737, Pittsburgh 30, Pa.
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STEEL SUPERSTRUCTURE OF
DOUBLE TRACK RAILROAD TRESTLE
2 Spans Total Length 75 feet
H.T.S. Bolts Aprox. 53 Tons
MEETS A.R.E.A. 1954 SPECS. for E-60 LOADING
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Two Drag Line Scraper Units, Used, complete with winding machines, motors, wire rope, anchor cars, post and tail blocks sheaves, remote control stations, bucket scrapers and repair parts. For detailed Bid Form contact

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L-80-K Lorain Crane
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Subject to Prior Sale
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$12.50 REG. $44.00

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- Constructed in accordance with ASTM specifications.
- A complete unit with brass cup & grooving tool.

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CAPACITY 3 to 20 TONS
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FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS
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Heavy Duty — $37.50
S. COHN & SON AUTO CO.
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One (1) used Northwest 80-D Shovel, S/N 12636.

One (1) Model 75 Link Belt Crane Dragline S/N 1-E-906

One (1) P&H Model 255-A Crane/Dragline S/N 6724

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One (1) Link Belt Model LS-52 Crane/Dragline S/N 6-G-F-451

One (1) Model 304 Koehring Crane/Dragline Complete with Backhoe Attachment S/N 5011

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TRACTORS—8-D-8's—2 U—15000 Series Top Condition with New or Near New Tracks and
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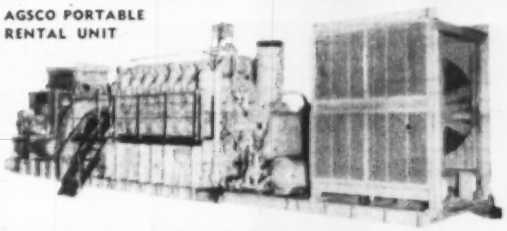

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OFFERED BY YOUR

CATERPILLAR DEALER

For Lower N. Y. State & Conn.

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CATERPILLAR D7 DIESEL TRACTOR, 20" tracks, crankcase guard, canopy top with hydraulic Bulldozer Blade. **Good operating condition. $4,000.00**

INTERNATIONAL TD14 DIESEL TRACTOR, 18" tracks, crankcase guard, track roller guards, with hydraulic Bulldozer. **Good operating condition. $4,000.00**

CATERPILLAR D6-60" GAUGE DIESEL TRACTOR, crankcase guard, 18" tracks, canopy top, electric starter with a Cat. 6S Bulldozer Blade. **Reconditioned in our shop. $7,250.00**

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CATERPILLAR HT4 TRAXCAVATOR, 60" gauge Diesel Tractor, 15" flat tracks, crankcase guard, 5 roller non-oscillating track frame, equipped with 80" wide-1¼ cu. yd. bucket. **New tracks and bucket...$7,250.00**

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CATERPILLAR #12 DIESEL MOTOR GRADER with 12' blade, electric starting, lights, cab, V-type scarifier, 13:00 x 24-12 ply tires all around. **Rebuilt and guaranteed. $10,000.00**

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Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
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Editorials

Housing For and By the Building Trades

MEMBERS OF THE CONSTRUCTION INDUSTRY in New York City are to be commended for the interest they have shown in a proposal that union welfare and pension funds of the city's building trades be put to work in a $90-million middle-income cooperative housing program.

This challenging proposal was developed by the city's committee on slum clearance after informal talks with AFL-CIO president George Meany and officials of the New York City Building and Construction Trades Council. And quite appropriately, Robert Moses, City Construction Coordinator, presented it at the annual dinner of the New York Building Trades Employers Association, the group that pioneered the development of welfare and pension funds in the construction industry.

Investment of union funds in housing is not unique, but this would probably be the first and unquestionably the biggest such investment by unions of the building trades, since it includes 9,000 housing units in five projects that would clear 100 acres of slums. It is further noteworthy in affording the unions the double-barreled opportunity of public service and self-help.

Through such a program, the building trades can make a substantial contribution to the city's ever-present and pressing problems of slum clearance and adequate middle-income housing. And in the process of helping to provide better housing for their own members, they will be providing additional construction employment opportunities for themselves.

The fate of the proposal now rests with the union representatives and contractors serving as joint trustees of the union funds. Many complex legal and practical problems must be studied and solved, but it is very much to be hoped that the final answer will be favorable and the housing built.

Engineers for Highway Work

MEETING THE SHORTAGE OF ENGINEERS by better use of the time of the limited number available was the subject of active discussion at the 1955 annual meeting of the American Society of Civil Engineers. This would be accomplished by assigning only professional work to the graduate engineers and using technicians for subprofessional assignments. Emphasis was placed on highway work in view of the greatly expanded highway building program anticipated in the near future. Also stressed was the need for providing more challenging opportunities in that field of activity to make it more attractive to young engineers.

Doubtless, there are changes in assignments that can be made by state highway departments that will result in more efficient use of their engineers. But there are practical problems that appear to limit the number of men who will be released for new jobs by this plan. For example, most engineering operations involve a considerable amount of routine work that, in theory, can be turned over to a technician. However, except in very large highway departments, such routine work, as a practical matter, can be done more economically by the engineer charged with the particular assignment. Engineering talent is being wasted badly only when a large part of an engineer's time is spent in doing sub-professional work.

Also, in the case of young engineers fresh out of college, there is something to be said in favor of giving them assignments that include a considerable amount of routine work while they become acquainted with the job and gain some of the practical experience they need so badly. Obviously this should not be carried to extremes for new opportunities to take on added engineering responsibilities should come relatively soon if the job is to have real challenge.

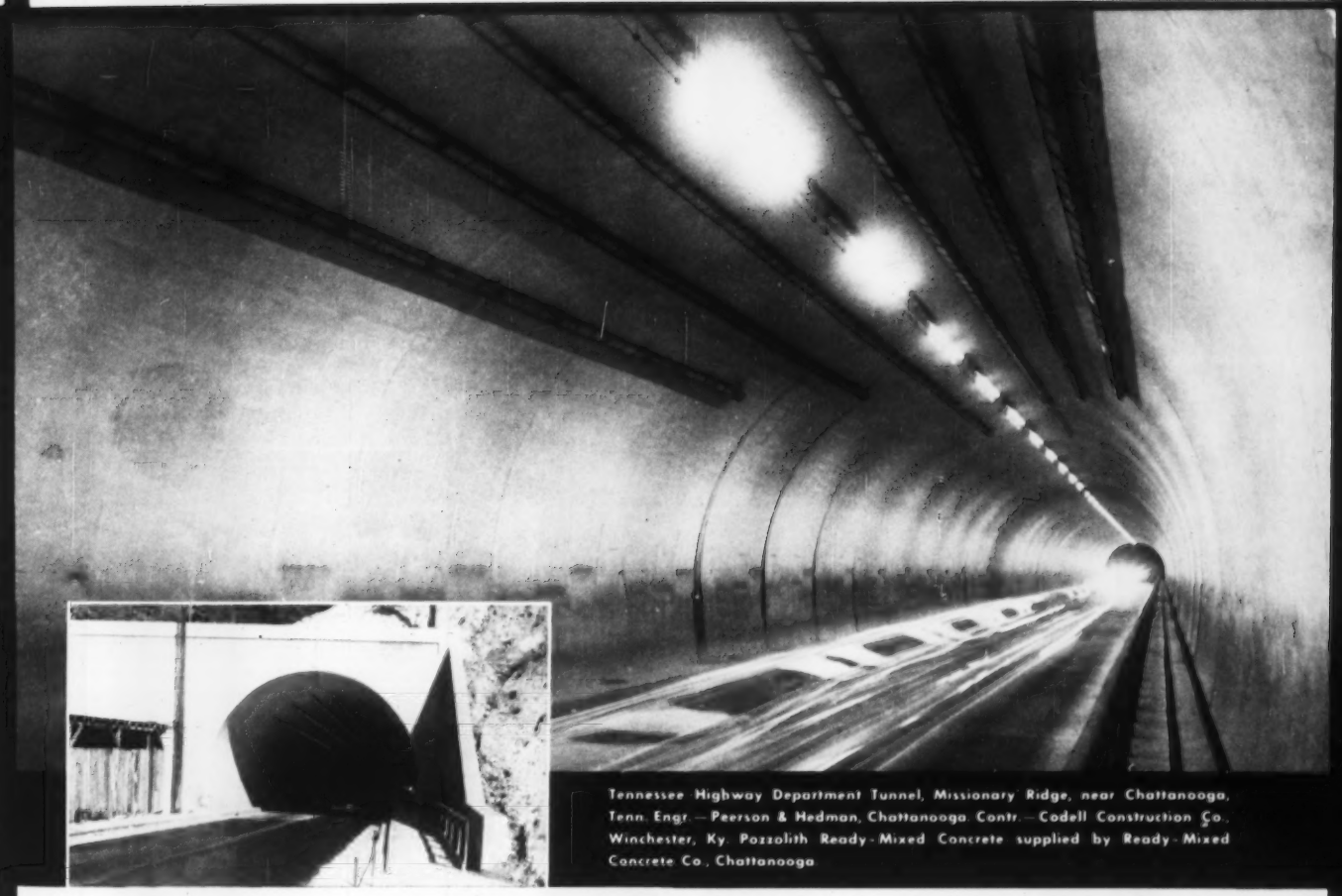
Yet challenging opportunities alone will not bring many more engineers to the state highway departments. Pay must be more nearly on a par with the going rates for other types of work than is the pay for engineers in most highway departments. And it is here that organized engineering groups like the local sections of ASCE and the state societies of professional engineers can be of material help. Their support of appeals to state legislatures by the highway departments could be the deciding factor in getting pay increases approved.

Scientific Control of Painting

COMMON PRACTICE IN WRITING PAINTING SPECIFICATIONS is to specify the number of coats and to require that the material shall be thoroughly brushed out. Under such specifications, careful inspection can insure that the listed number of coats has been applied and that each coat has been well spread over the surface. But whether each coat is uniformly spread or has been applied at the most effective thickness cannot be determined. The end result is that the painted structure probably has not received as much protection for the same cost as it could get under scientific control of the painting.

How such scientific control is being made to pay dividends on the power plant painting work of the Bechtel Corp. was described in the Jan. 5 issue of ENR, p. 52. That organization uses wet-film-thickness gages as an important adjunct to the painting operation, and magnetic and electronic instruments for measuring paint thickness and continuity of the coating on the finished product.

An important finding of this scientific inspection work is that flat surfaces require less paint than edges, welds and rivet heads. This finding now is reflected in the current specifications, which emphasize thickness and continuity of coverage. The end result is better protection at considerably less cost.



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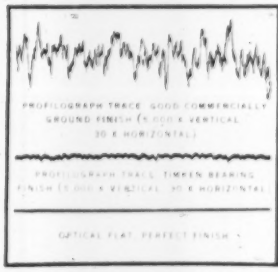

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